

Name: _____ Date: _____ Class: _____

Protective Coloration and Survival

Learner Objectives:

- Identify the role of variation in species survival under changing environmental conditions.

Key Terms:

Variation

Adaptation

Biological diversity

Background Information: Many species show variation in color and patterning which can allow individuals to blend in with their surroundings. Species found in a variety of habitats may show a wider range of color and pattern variation than those found in only one habitat.

Research Question: Does the color of an organism affect the organism's chance of survival?

Hypothesis:

Materials:

Graph paper	75 cm x 75 cm sheets	squares (same as
Colored pencils or	of colored paper	paper)
markers	60 chips or squares of	
Stopwatch	three different	
Forceps	colored chips or	

Procedure:

This investigation / activity has been adapted from:

Mah K, Martha J, McClelland L, et al. *Science in Action 9*. Toronto, ON: Addison Wesley.

1. You will use a colored sheet of paper as your habitat, and 60 chips of assorted colors as your prey. Working in partners, select which partner will be the predator. The non-predator partner will set up the habitat.
2. To set up the habitat, ask the predator partner to turn away (no peeking). Next, spread the colored sheet of paper on a desk. Randomly scatter 20 squares of each of the colored prey on top of the sheet of paper.
3. Have the predator turn around and take prey from the habitat one at a time using the tweezers. The predator will only have 5 seconds to do this.
4. Record the color and number of remaining chips.
5. Assuming each survivor produces 2 offspring the same color, determine how many chips of each color are required to make up generation 2. Randomly scatter new chips on the habitat mat to make up generation 2.
6. Repeat steps 2-6 for a total of 5 generations, allowing the predator to hunt prey for 5 seconds each generation. Record your results in a data table.

Observations:

	Number of color # 1()	Number of color # 2()	Number of color # 3()
Generation 1	20	20	20
Survivors of selection 1			
Generation 2			
Survivors of selection 2			
Generation 3			
Survivors of selection 3			
Generation 4			
Survivors of selection 4			
Generation 5			
Survivors of selection 5			

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Analysis:

1. On a separate sheet of paper, graph your data using an appropriate method. Use a legend and colored pencils to indicate the numbers or different colored prey organisms for each generation.
2. How does the composition of the prey population at the end of selection 5 compare to the original population? Why?
3. Share your results with other groups in your class who used different background colors. What trends, if any did you observe?
4. Considering the results of the entire class, is one particular prey color necessarily better than all the rest?
5. How does the color of the survivors relate to their habitat background? Suggest a possible explanation for this pattern.
6. What might happen if you repeated this experiment when the predator was wearing sunglasses?

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