

Evolution by Natural Selection Lab: The Bean Eaters

Introduction:

We will simulate the evolution of an imaginary species that eats beans. Each variety of the species has developed special structures to pick up the beans. We will monitor the feeding habits of each group within the species and record the population growth over time. Recently, a drought has limited the amount of beans available for consumption. We will assign students to play the roles of these bean-eating creatures and collect information on the survival of each generation.

Darwin’s Theory of Evolution:

1. _____

2. _____

3. _____

4. _____

Purpose: To consider Darwin’s theory of evolution as it applies to a species when a selective pressure exists.

Procedure:

1. Each person will be assigned to a group of bean eaters.
2. Collect as many beans as possible during the 30-second generation.
3. Record the class data.
4. Eliminate and add group members according to the results of each generation.
5. Repeat the bean collecting process for successive generations.
6. Construct graphs to illustrate the data that was collected.

Results:

		Generation Number							
Variety		1	2	3	4	5	6	7	8
Tubies	# people								
	# beans								
Spooners	# people								
	# beans								
Forcepies	# people								
	# beans								
Choppers	# people								
	# beans								
Probers	# people								
	# beans								
Forkers	# people								
	# beans								
Staplerus Removus	# people								
	# beans								

Data Analysis:

- Graph A:
1. Title: Changes in Population Size for the Varieties of Bean Eaters
 2. Y-axis: # of People Alive
 3. X-axis: Generation Number
 4. Seven lines to represent the different varieties. Make a key.

- Graph B:
1. Title: Food Collecting Ability for the Varieties of Bean Eaters
 2. Y-axis: # of Beans Collected
 3. X-axis: Generation Number
 4. Seven lines to represent the different varieties. Make a key.

Discussion:

1. Which trait was used to determine which variety of bean eater was the most fit?

2. The different varieties of bean-eaters were _____ for food.
3. Which bean eater was the most "fit"? _____
4. Which bean eater was the least "fit"? _____
5. How would you explain your data if one variety of bean eaters consumes a significant increase of beans in one generation even though their population did not increase?

6. Summarize Darwin's theory of natural selection. _____

7. Does your data support Darwin's theory of natural selection? Explain using Darwin's key points.

