

DARWIN'S FINCH BEAK LAB

Objective/Skills: You are going to mimic how the variations of Darwin's finches compete for three different types of food sources. Pretend that the different types of objects (pasta, paper clips, and beans) are different types of seeds for the birds. Pretend that the different tools (fork, knife, spoon, and taped hand) are different shaped finch beaks. You will simulate natural selection happening throughout the trials in this lab. Natural selection (survival of the fittest) occurs when a population changes in response to their environment.

Materials:

Forks	50 Pieces of pasta
Knives	50 Paper clips
Spoons	50 Beans
Tape (for hand)	7 Paper Cups
	Lab Write-up

Procedure:

1. There will be lab groups containing 4 students. Each group member will be assigned a different "beak adaptation" and must keep their "beak" for the entire lab (no switch between trials!)
2. Your lab groups needs to count out 50 pieces of pasta, 50 paper clips, and 50 beans and place them into 3 individual paper cups (do not mix them).
3. You will have 1 minute to do each trial, there will be 3 trials (1 for each of the "seeds" pasta, paper clips, beans).
4. Start trial #1 with 1 paper cup of 50 "seeds". Toss the "seeds" all over the desk. You and your lab partners will have 1 minute to "eat" as many "seeds" as you can with your "beaks" by placing them in your own collection cups.
5. At the end of 1 minute. Record the number of "seeds" you ate (these should be in your own cups) and put your data into your chart for that trial. Copy the number of "seeds" your lab partners ate with their "beaks" on the chart for that trial.
6. Put a circle in the data table around the number for the "beak" that collected the LEAST amount of "seeds" for each particular trial. Put a square in the data table around the number for the "beak" that collected the MOST amount of "seeds" for each particular trial.
7. Return "seeds" to original cups and then repeat steps 4-6 for all 3 trials.
8. Record all data. Graph your results on a bar graph.
9. Analyze your data by comparing how fit for the environment each "beak" was, compared to the other "beaks" in your lab group.

Lab: Modeling Darwin's Finch Beaks

Name: _____

Hypothesis (If.... then... because...) Write a hypothesis for each of the three trials.

1.

2.

3.

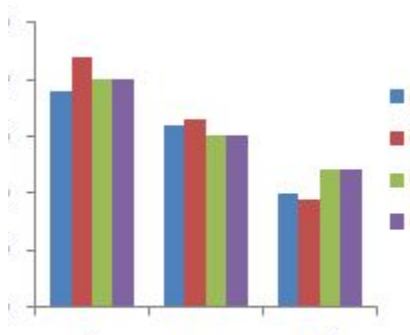
Data: Enter the number of “seeds” collected by each “beak” during each trial.

Circle the best performing beak in each trial. **Box** the worst performing beak in each trial.

	Knife	Spoon	Fork	Taped Hand	TOTAL
Trial 1: Pasta					
Trial 2: Paper Clips					
Trial 3: Beans					

Graph: Create three separate bar graph clusters on a single graph

Example:



x-axis: Trial # (seed type)

y-axis: Seeds collected by each beak type

Include a legend and use colour to graph each beak type in a trial cluster

Title your graph and label your axis

Analysis: Complete the questions and write a conclusion paragraph

Refer to your charts and bar graphs to answer the following questions

1. Which finch became extinct in **trial #1 pasta**? _____
2. Why did this finch become extinct? _____
3. Which finch was best fit for survival on this "seed" type? _____
4. Why was this finch best fit for survival? _____

5. Which finch became extinct in **trial #2 paper clips**? _____
6. Why did this finch become extinct? _____
7. Which finch was best fit for survival on this "seed" type? _____
8. Why was this finch best fit for survival? _____

9. Which finch became extinct in **trial #3 beans**? _____
10. Why did this finch become extinct? _____
11. Which finch was best fit for survival on this "seed" type? _____
12. Why was this finch best fit for survival? _____

By analyzing all of the trials' collected data:

15. Which finch "beak" performed best over all the trials? _____
16. Did this answer match your hypothesis? _____
17. Why did this finch "beak" perform best? _____

18. Which finch "beak" performed worst over all the trials? _____
19. Did this answer match your hypothesis? _____
20. Why did this finch "beak" perform worst? _____

21. What were some hidden factors (did you develop a strategy) you realized while doing these trials to help your "beak" eat more "seeds" during the trial? _____

22. How does this relate to animals in real life? _____
23. How might these finches avoid extinction due to competition? _____

Conclusion:

Explain and discuss what you have learned about evolution by natural selection during this lab by using ALL of the following terms in a paragraph:

population, environment, competition, fitness, adaptation, and extinction.