

Name: _____ Date: _____ Period: _____ Score: _____

Mini Lab Activity: Observing Diversity of Bird Beaks

DUE DATE: _____

Background:

- Birds are very diverse. They are diverse in appearance, the variety of sound they make, lifestyles and in the types of foods they eat. Either they can have a specialized beak or they can have a generalized beak. A generalized beak is useful for getting many kinds of food, but specialized beaks are useful for getting only one type of food. In this activity you will investigate the diversity of bird beaks and explore some ways that this affects the type of food they eat. You will use different tools to simulate the different beaks and investigate how the presence or absence of one type of food can affect the fitness of a population of birds.

Materials:

- You will need the following:
 - Lab notebook
 - Pen/pencil
 - Different "beaks"
 - Paper cup
 - Stopwatch (watch with second hand)

PROCEDURE:

1. There will be 5 stations set up in different locations of the class. Your group will rotate through the five stations trying to get food using the tools provided to simulate bird beaks.
2. You will have 30-45 seconds to hunt for food using your beak. After the allotted time count and record the amount of food "eaten" for each station. After you are done, put everything back as you found it so that the next member of your team can repeat.
3. You will continue to rotate through the stations until all members of your group have completed the assigned activity for each station. When you're done you will move on as a group to the next station.
4. Make sure you record your data. You should have a table in your notebook for each station.
 - When you are done with each station plot your data on a graph. You will determine which type of graph will better suit your data.

STATIONS

Station One: Log with small larvae (rice)

- Use your beak to get as many "bugs" out of the log that you can. You may not touch the log with your free hand.

Station Two: Pond with small plants and animals floating

- Use your beak to get as much food out of the water as you can.

Station Three: Seeds in an open field

- Use your beak to pick up as many seeds as you can. You must crush the seeds with your beak. You may not crush seeds against the table. Count only the crushed seeds.

Station Four: Bird has killed the rabbit

- Hold your beak to pull out the staples; they represent flesh of the rabbit. You may hold down the animal with your free hand, but you may not lift it off the table.

Station Five: Worms hidden in grass (rubber worms)

- Use your beak to find worms hiding in the grass. You may not use your free hand to hunt, only use your beak.

Data Table #1: Group Data

Name (Use initials)	STATION 1 Log with small larvae	STATION 2 Pond with small plants and animals "floating"	STATION 3 Seeds in an open field	STATION 4 Carnivorous birds	STATION 5 Worms hidden in grass

Making a Graph Using Data

Once done gathering your data, you will be responsible for creating a graph. You need to graph your own individual data along with your group's data.

Analysis Questions:

Using the data you just gathered answer the following questions on a separate sheet of paper.

1. Which beak picked up more food? What might be some reasons for this?
2. Let's say that there is a period of drought (i.e. very little or no rain; dry). The lakes, ponds and rivers have dried up. How might this affect the birds in your population? Which birds will be affected the most?
3. Some birds possess specialized beaks. This enables them to be better at eating only certain types of food. Other birds have a "generalized" beak. This enables them to be able to eat more than one type of food or be more general in what they eat. What might be the advantages and disadvantages for each one? List three and justify them using Darwin's theory of natural selection within your answer.
4. Of the "beaks" used in this activity, which one would you say is more "generalized" and why? Which one is more "specialized" and why? Defend your answer using Darwin's theory of natural selection within your answer.
5. Which beak would have a better chance to adapt to any environment? Defend your position in terms of natural selection and adaptation. (10 points)