

Objectives:

- Explain physical adaptations birds have due to the available food supply
- Infer what beak type is most efficient for a given food supply
- Describe what will happen to a bird population if its environment can no longer support bird's food source

Pre-lab question

1. Read the background and write these key terms and their meaning in your notebooks: geographic isolation, adaptation, resource partitioning, and natural selection.
2. Copy the following table into your notes (you do not need to draw the images). Consider how the beak of the bird is shaped as well as the type of beak the bird has. For example, the first bird has a beak that is good at cracking and is relatively small. This makes the beak good for eating seeds because it can crack open the seeds and get the nutrients inside. Using the information in the table, hypothesize the type of food the bird will eat and support your answer (i.e. explain why you think this type of food)

SHAPE	TYPE	Food source and how bird uses beak
	Cracker	Seed eaters like sparrows and cardinals have short, thick conical bills for cracking seed.
	Shredder	
	Chisel	
	Probe	
	Strainer	
	Spear	
	Tweezer	
	Swiss Army Knife	

3. Copy the following tables in your notebook:

Table 1:

Island	Beak Type	Trial 1	Trail 2	Trial 3	Average	Which Beak worked best?	Describe structural advantage
Aquatic Vegetation	Pipet						
	Pliers						
	Tweezers						
	Dip net						
Worms	Pipet						
	Pliers						
	Tweezers						
	Dip net						
Seeds	Pipet						
	Pliers						
	Tweezers						
	Dip net						
Necter	Pipet						
	Pliers						
	Tweezers						
	Dip net						

Procedure:

You and your groupmates are going to represent four different types of birds. Along one of your many journeys, you discover a variety of islands. Upon closer inspection you notice that each island contains a different type of food for birds. It is up to you to visit each island and compete with various structures of beaks, and then relate their structure to their function. Each test will allow you to see how different bird beaks are adapted to their food source.

1. As a group, observe the food present on this island and the available beak types. Use your observations to answer the following questions: What will a bird have to do to obtain this food source? Which beak will work best to obtain this food source and why?
2. Now you are ready to begin the competition. There are four beak types that need to be tested and four members of your group. Each member should have their own beak type. Read the directions at each island **carefully**. The instructions are similar but not identical for each island. **Please Read Carefully!!!!!!!**
3. Make sure you have table 1 completed for your island prior to moving on to the next island.
4. Repeat steps 1-3 for each island, for a total of four islands.

Post analysis questions:

1. Choose one island that you visited and construct a bar graph using the averages. Make sure to label your graph properly. Explain what the graph is demonstrating in terms of natural selection.
2. What three pieces of evidence would you supply from this activity that demonstrates an understanding of the Theory of Natural Selection? How does this evidence demonstrate understanding?
3. There are many natural and man-made changes to the environment that can affect different species of birds. Choose two of the following changes to an environment:
 - a. Deforestation
 - b. Drought
 - c. Aquatic oil spill
 - d. Application of an insecticide (kills insects)

Describe how each would change the impact of everyday lives of birds in the area. Give an example of an adaptation that would allow the bird to be better suited to its new environment.