

Summary:

This hands-on activity is designed to teach students about the concepts of biodiversity, evolution and Darwin's theory of natural selection. By investigating biodiversity and the process of evolution, students will learn how traits beneficial for survival are selected for and genetically passed on to successive generations. Students are given different implements to use as beaks. They must use these 'beaks' to obtain a variety of different types of 'food'. Students will see which beaks are best adapted for different types of food, and how this can drive survival or extinction, using the finches Darwin observed in the Galapagos Islands as an example.

Materials and procedures:

- Five types of 'beaks': chopsticks, tweezers, clothespins, spoons, and toothpicks. Each set should include enough for each team member X 2 (i.e. 6 tweezers for three team members)
- 12-16 feeding troughs: metal tins or bowls
- Cups to place food in
- Food: rice, assorted dried beans, seeds, and trash (cardboard pieces, twigs, Styrofoam, etc.)
Food will need to be mixed for round one (6-8 troughs), divided to just rice or just beans/seeds for round two and three (the additional 6-8 troughs).
- Timer

Directions:

- Each member of a group is a bird who needs to collect food to survive. Participants will use their 'beak' to collect food.
- Participants must collect as much food as he/she can in 30 seconds, using only their 'beak' and placing the food in his/her cup.

- Count the amount and type of collected food and enter the information on the table below.

Rules:

- Food can only be collected using the 'beak'.
- No hands, food can only be touched by the 'beak'.

Round 1

	Rice	Seeds	Dried Beans	Cardboard	Total
Bird 1					
Bird 2					
Bird 3					
Total					

- Follow procedure as before, however before round two describe how natural disasters may eliminate food sources and types (i.e. drought, typhoon, flood). Remove the mixed food troughs and replace with the just rice or beans troughs.

Round 2

	Rice	Dried beans	Total
Bird 1			
Bird 2			
Bird 3			
Total			

- For round three, have participants discuss which ‘beaks’ were more successful at gathering food of different sizes, shapes, and varieties. The successful ‘beaks’ will pass on their traits, and less successful ‘beaks’ will not. Remove unsuccessful ‘beaks’ and redistribute successful ‘beaks’ to all groups.

Round 3

	Rice	Dried beans	Total
Bird 1			
Bird 2			
Bird 3			
Total			

Questions for discussion

- Were some beak types more successful at feeding than others?
- Was there any preference for different food types amongst the different species in Round 1?
- Do all birds have the same diet?
- Did all birds survive the reduced food diet (Round 2)?
- Were the best-adapted birds the same on both islands (tables)?
- What does this show about Darwin’s theory of evolution by natural selection?