

Battle of the Beaks








Birds have amazing adaptations to the environment they are in, especially in terms of the food or prey that they eat. Investigate how beaks are an important example of how adaptations can be highly diverse and tightly related to function.

For 30 students:

- 8 scissors
- 8 plastic spoons
- 8 tweezers
- 8 large binder clips
- 5-6 boxes of large paper clips
- 200 large rubber bands
- 5-6 boxes of toothpicks
- 2 cups of macaroni
- 30 plastic cups (best if clear)

Activity 1. Research task: Specialised beaks

Research and investigate the diet of the following birds, and describe how the structure of their beak helps them eat the food that makes up their diet.

Bird species	Beak	Diet	How does the structure of the beak help the bird forage?
Toucan			
Australian Magpie			
Australian Ibis			
Kookaburra			
Spoonbill			
Sulphur-crested Cockatoo			
Wedge-tailed Eagle			

Activity 2. Modelling the adaptive advantages of specialised beaks

In any habitat, food is limited and the types of foods available may vary. Animals that are better adapted to take advantage of available foods will fare better than those who are less well adapted, and thus live to pass on their genes to the next generation.

In this activity, you will be simulating birds with different beaks competing for various foods.

Method

First hour

1. Collect the materials as instructed by your teacher (one beak, one cup).
2. You are a very hungry bird. You can only eat with the beak you have. The cup represents your stomach. It must remain upright at all times. You must hold the 'beak' in one hand and the 'stomach' in the other. You can only place food in your stomach with your beak.
3. Certain food items will be placed in the feeding area. When your teacher says "go", collect as much food as possible placing it in the stomach until your teacher says "stop."
4. Take one of the food items (paper clip beetles) and distribute the clips within the feeding area. Feed for another 1–2 minutes or until all the food is gone.
5. Students empty their stomach cups and count the contents. Fill in the recording sheet below.
6. Repeat using each of the other food items and complete the recording sheet.
7. Examine the data: tally up the class totals for each of the beak types in a grid on the board and create a bar graph below your recording sheet representing the class total for each of the beak and food types.
8. Answer the discussion questions

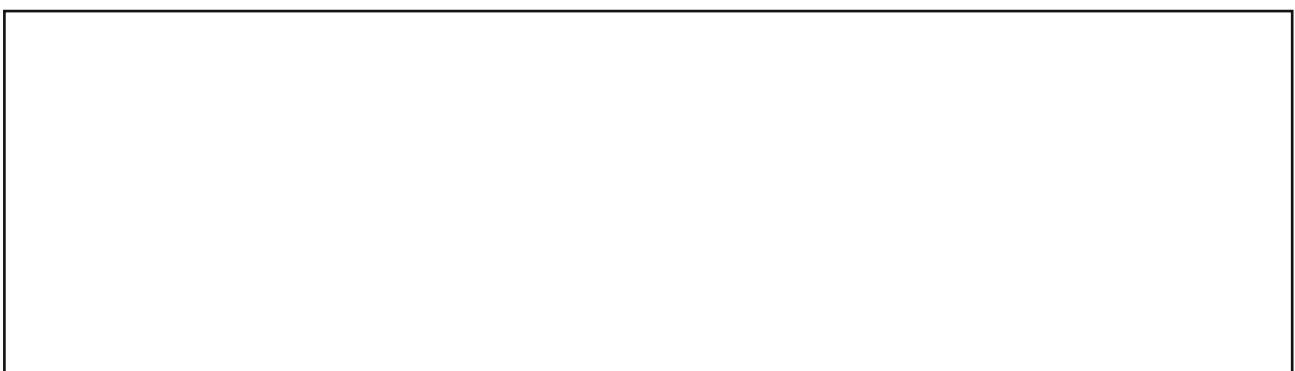
Second hour

9. Pick up your beaks and stomachs once again and return to the circle. Explain that obviously most habitats have more than one kind of food available. Think: what will your strategy be if all of the food types are available?
10. Feed for 4 minutes and record your data in the recording sheet below.
11. Repeat Steps 7-8 for second hour data.

First hour

	Paper clips	Macaroni	Rubber bands	Toothpicks
Scissors				
Spoons				
Tweezers				
Binder clips				

Bar graph



Discussion questions:

1. What did you notice about your feeding abilities?
2. Did everyone with your type of beak have the same success rate with the same foods? Why or why not?
3. What did you notice about your behaviour and the behaviour of others?

	Paper clips	Macaroni	Rubber bands	Toothpicks
Scissors				
Spoons				
Tweezers				
Binder clips				

Bar graph



Discussion questions:

1. What did you notice about your feeding abilities? How was this different from your previous eating experiences?
2. Did everyone with your type of beak have the same success rate with the same foods? Why or why not?
3. What did you notice about your behaviour and the behaviour of others?
4. What was your strategy for maximising food intake?
5. What would happen if all the bird types we have been working with flew to an island where no birds had been before and the only food type available was macaroni munchies. Which bird beak type would be unsuccessful? Explain your answer.