Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Bird Beak Adaptation

**Purpose**

In this activity, you and your group will model how competition for food can be a driving force of natural selection. You will witness how certain birds are better adapted to eat specific food sources.

**Background Information**

On a long voyage around the world, Charles Darwin stopped at the Galapagos Islands. A genius of his time, he noticed there were slight variations in the traits of the animals that lived on each island. Darwin’s famous observations were made on finches, a type of bird. Darwin noticed that different species of finches had slightly different beaks, depending on the type of food that was available within the habitat in which they lived. Darwin developed the theory of natural selection based on his observations. In his theory, he stated that only those organisms that are most adapted to their environment would live long enough to produce young. He called this process “survival of the fittest”. Thus, these helpful variations are passed from one generation to the next, and with time, this changes the alleles within a gene pool and evolution ultimately occurs.[[1]](#endnote-1)

**Procedure**

 **Materials**

1. Beak (Scissors, binderclip, spoon or tweezer)
2. Rubberbands
3. Beans
4. Paperclips
5. Macaroni
6. Stomach (bowl/bag)

**Sequence of steps**

Obtain your assigned beak and your stomach at your designated lab station.

**ROUND 1:**

1. You will be designated a “beak” and gather as much of one specific type of food as you can in the allowed amount of time.
2. Food only counts when it is picked up and put in the stomach with your beak.
3. Food does not count if your beak is not used properly!
4. ![C:\Users\Angela\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\DRP2N1IJ\MCj04242300000[1].wmf]()Mild competition is normal, but NO pecking!!!
5. Count the amount of the specific food you ingested into your stomach and complete Data Table #1. Fill in the data for each of the other types of birds (group members) in your ecosystem (lab station).
6. Repeat step #1 for each of the four different food types.

**ROUND 2:**

1. Place the bowl with all the food types in the feeding area (middle of table).
2. ![C:\Users\Angela\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\DRP2N1IJ\MCj04242300000[1].wmf]()In the given amount of time, gather as much of ANY foods of your choice as you can.
3. When time is up, count your ingested good and record on Data Table #2.
4. Record the data of your entire group in Data Table #2.

**![C:\Users\Angela\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\DRP2N1IJ\MCj04242300000[1].wmf]()**

 After Round #1, complete:

Data Table #1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Scissor Beak | Binderclip Beak | Spoon Beak | Tweezer Beak |
| Rubberband Worms |  |  |  |  |
| Bean Beetles |  |  |  |  |
| Paperclip Grasshoppers |  |  |  |  |
| Macaroni Snails |  |  |  |  |

After Round #2, complete:

Data Table #2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Scissor Beak | Binderclip Beak | Spoon Beak | Tweezer Beak |
| Rubberband Worms |  |  |  |  |
| Bean Beetles |  |  |  |  |
| Paperclip Grasshoppers |  |  |  |  |
| Macaroni Snails |  |  |  |  |

**Analysis Questions:**

* + 1. What was your beak type?

* + 1. During Round #1, what food type was your beak best adapted for according to your data?
		2. Was there any beak that was well adapted to all food types? If so, what?
		3. If this bird (from question #3) was removed from the ecosystem, what do you think would happen to the other birds?
		4. Over a long period of time, what might you hypothesize could happen to your bird species?
		5. How might your bird species evolve over time to become better adapted to this environment?
		6. What food did you choose to eat most during Round #2? Why?
		7. How does this activity demonstrate the idea of natural selection?
		8. Describe the type of bird beak that would be best adapted to this ecosystem overall.
		9. How do you think the population dynamics of this ecosystem could change over time?
1. Zallo, Izaskun (2008). Bird Beak Adaptation. *Pleasant Grove High School Agriculture Department* [↑](#endnote-ref-1)