



The Bio/Diversity Project

Lesson Title: Specific Pollinators-Birds & Hummingbirds

Teacher: Zabrina and Emma

Grade Level: 6

Lesson Length: 55 minutes

This lesson has been adapted from:  Feathered Friends - Complete-2.pdf

AZ Science Standard:	• <i>Develop and use models to demonstrate the interdependence of organisms and their environment including biotic and abiotic factors</i>
Learning Objective:	• <i>Students will be able to describe three true features about birds in general.</i> • <i>Students will be able to identify which types of bird beaks can pick up what food source.</i>
Scientist of the Week:	• <i>Sergio Díaz Infante Maldonado</i>  • <i>Biologist</i> • <i>Patagonia, Arizona & Mexico City, Mexico</i> • <i>He has studied about forest birds & hummingbird-plant interactions.</i> • <i>He has collaborated on several hummingbird ecology studies in different parts of Mexico and has also worked in environmental education programs.</i>

Vocabulary	Materials
-------------------	------------------



● Adaptation ● Migration ● Interdependence ● Symbiosis ● Characteristics ● Species Diversity ● Hibernation	● <u>Powerpoint</u> ● 30 Colored Single Sided Copies of <u>true/false print out</u> ● 5 boxes/containers ● 15 marbles ● 15 mini pom poms ● 25 pinto beans ● 20 rubber bands ● 5 Clothespins ● 10 Plastic Straws ● 5 Pairs of Chopsticks ● 5 Plastic Spoons ● 5 Plastic Tweezers ● 80 flashcards			
Seasonality:				
<i>Monsoons</i> July-Sept.	<i>Autumn</i> Oct.-Nov.	<i>Winter</i> Dec.- Feb.	<i>Spring</i> Mar.-Apr.	<i>Dry Summer</i> May-June
Guiding Questions:				
<i>Hummingbirds:</i>				
● How does the species diversity of hummingbirds in the Sonoran Desert contribute to the overall biodiversity of the region?				
<i>Birds:</i>				
● How does the pollination method of the white-winged dove compare to pollination done by hummingbirds? ● What are the advantages of bird adaptations, and how do these adaptations contribute to the species diversity?				

Engagement/Introductory Activity:

- Pass out a [“TRUE” and a “FALSE” piece of paper](#) to each individual student for this activity.
- Then, display each True/False statement on the screen, reading each out loud for the students. Ask students to take at least 10 seconds to think before you have them put up their answer so that everyone can have the chance to think independently.
- Here are the statements:
 - 1. Birds are the only living animals that have feathers. (TRUE)
 - 2. Birds lose and replace their worn or damaged feathers. (TRUE)
 - 3. All birds have thick, heavy bones that provide the structure needed to fly. (FALSE)
 - 4. Birds have poor eyesight. (FALSE)
 - 5. Bird hearts beat more slowly than human hearts. (FALSE)
 - 6. All birds lay eggs. (TRUE)
 - 7. All birds migrate. (FALSE)
 - 8. Birds are vertebrate animals. (TRUE)
 - 9. All birds are warm-blooded. (TRUE)
 - 10. All baby birds hatch covered in downy feathers. (FALSE)
 - 11. Male and female birds of some species look different. (TRUE)



Exploratory Activity:

Gather as many of the following items as you can to represent foods birds eat.

- **Food Resources:** Pinto beans (small animals), rubber bands (earthworms), mini pompoms (grubs/caterpillars), marbles (insects). We will place 3 marbles, 3 mini pompoms, 5 pinto beans, and 4 rubber bands into containers.
- **Beaks (utensils):** Clothespins, chopsticks, straw, spoon, tweezers.
- In groups of 5, Students will then hold one type of “beak” in one hand and keep the other hand behind their back. With one type of food in front of them, they will try to gather as much food as possible in 15 seconds (A timer will be displayed on the projector). Keeping in mind, their survival depends on their ability to gather food! After 15 seconds, they will try another beak and gather food for another 15 seconds (A timer will again be displayed on the projector). Repeat these steps for each type of beak.
- **Questions:**
- After students have finished the activity, they will help clean up the supplies and then return to their seats where interns will discuss the following questions with the class to gauge learning from the activity:
 - Which beak was most successful in gathering each type of food?
 - Bird beaks are like the tools you used in this activity. Can you match the shape/function of any of the tools with any real beaks?
 - The shape of a bird’s beak is a critical adaptation for their survival because it helps them gather the food within their habitat. Different beaks are better suited for different foods. Next time you see a bird, take a look at its beak and see if you can tell what it eats!

Explain:

- Show students [this video](#) to introduce the idea of bird conservation before talking about our action project. (It’s about 4 minutes long).

Extension Activity/Questions:

- Model the creation of a few different bird feeders to have students start thinking about what they want their own to look like (*For the purpose of our action project, our interns will be making three different bird feeders at home prior to this lesson that we can bring in and show as examples*)
- Explain that over the next month we will be creating and decorating our very own bird feeders so that we can play a part in helping/conserving local bird species.
- Explain to students which material they will have access to: **popsicle sticks, string, glue, paint**
- Have each student draw out a model on paper of what they might want their bird feeder to look like.

Evaluation Activity:

- Pass out a final notecard to each student and ask them to write down a 3-2-1 reflection as their exit ticket.
- Ideally, it should consist of 3 things they learned in the lesson, 2 things they want to learn more about, and 1 question they might have about either the lesson or the upcoming action project.
- This will help us address any confusion before we start building.