



The Bio/Diversity Project
Lesson Title: Hummingbirds as Pollinators

Teacher: Lily and Grace

Grade Level: 9th

Lesson Length: 50 min

Based on Existing Lesson Plans: [Structure and Function: Hummingbird Tongue](#) and [Inquiry-Based Hummingbird Activities](#)

AZ Science Standard:	<i>HS.L4U1.27</i> Obtain, evaluate, and communicate evidence that describes how changes in the frequency of inherited traits in a population can lead to biological diversity
Learning Objective:	- Students will be able to explain why hummingbird tongues and bills help them drink nectar from flowers - Students will be able to describe why hummingbirds migrate to Arizona
Scientist of the Week:	- Dr. Joseph Drew Lanham  - Professor, Cultural ornithologist, and poet - Clemson University in South Carolina - Advocates for the African-American role in natural resources conservation - Researches songbird ecology

Vocabulary	Materials
- Hibernation - Migration - Pollination - Species Diversity	Slideshow - Class set of Observe, Describe, Wonder - Worksheet (105) - Class set of fill-in-the-blank worksheet (53) - A few pennies to pass around class
Seasonality: Any	



<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: • What advantageous characteristics do hummingbirds have for pollination? • Why do hummingbirds migrate to the southern United States? • How do hummingbirds impact their ecosystem?				

Engagement/Introductory Activity:

Have the students watch a video about Dr. J. Drew Lanham, a cultural ornithologist. Then, we'll have students discuss what they already know about hummingbirds and ask questions as a group. This will be a good way for the students to start thinking about hummingbirds, leading us into our content for the rest of the lesson!

- [Here](#) is the video. We chose to play the video from 3:52-5:28 since the video is 13 minutes long.
- After the video, ask the students a question:
If you were a bird for a day, where would you fly?
Then, have them discuss their answers with their neighbor.

Exploratory Activity:[Observe, Describe, Wonder - Worksheet](#)

The two-page format encourages inquiry-based exploration. In the first column, students look closely at a photo and describe details they notice. In the second column, they will ask a question inspired by their observations.

We will show the students three photos of hummingbirds in the slideshow presentation. Looking at the collection of pictures, the students will have one minute to make wonders and notices about the images, filling in their worksheets. While this is happening, we will model how to describe details and ask questions. For example, we will say, "look at images that capture a hummingbird in flight and think aloud: I noticed the wings look like a blur. How many flaps do their wings make in a second? How and why do hummingbirds hover in mid-air at flower blossoms? How do they get nectar from flowers? Which flowers do hummers prefer?" It is our duty to encourage students to wonder aloud and record their ideas on the Observe and Wonder chart.

Explain:

- Make sure to explain how to make a hypothesis. What do students think the answer to their question is? What do they know about birds?
- Working with their group (2-5), students will form a hypothesis for one of their questions.
- As teachers, encourage students to ask follow up questions by giving them hints. Help students collect words and phrases they'll need to communicate their scientific thinking.
- This will then lead us into our slides about hummingbirds, which will answer a lot of common questions. How light are they? How fast do their wings flap? How do they migrate? How do they eat and drink?

Extension Activity/Questions:

Play a video, [Structure and Function: Hummingbird Tongue](#), where students will learn how the structure of



hummingbird tongues are specialized for their function of drinking nectar. Then, ask the class critical thinking questions related to the video.

Critical Thinking Questions

- *How was your experience discovering the structure of the hummingbird's tongue?*
- *Why do you think hummingbird tongues are structured to lap nectar so quickly?*
- *How often does a hummingbird have to feed, before it "runs out of fuel?"*
- *Why do the plants hummingbirds feed on only have a small amount of nectar?*

Evaluation Activity:

Have students complete a [fill-in-the-blank exit ticket worksheet](#), which contains the following questions:

*1. Hummingbird bills are shaped like: _____
so they can reach _____.*

*2. Hummingbirds _____ from Central America or
Mexico to the southern United States to _____.*

*3. Write your favorite hummingbird fact you learned today:
_____.*

This will allow us to evaluate the students' understanding of the significant topics from the lesson and see what they enjoyed.