



The Bio/Diversity Project
Lesson Title: Pollinators in Urban Areas

Teacher: Zabrina & Emma

Grade Level: 6

Lesson Length: 55 minutes

This lesson has been adapted from:

AZ Science Standard:	• 6.L2U3.11 • <i>Use evidence to construct an argument regarding the impact of human activities on the environment and how they positively and negatively affect the competition for energy and resources in ecosystems</i>
Learning Objective:	• <i>Students will be able to describe what an urban area is and how pollinators live amongst us within them.</i> • <i>Students will be able to explain the connection between the bird feeder action project and how we can help birds in our own neighborhoods.</i>
Scientist of the Week:	• <i>Julia Carabias Lillo</i>  • <i>Professor at National Autonomous University of Mexico</i> • <i>Mexico</i> • <i>Professor at the National Autonomous University of Mexico</i> • <i>Served as the Secretariat of Environment and Natural Resources under President Ernesto Zedillo from 1994 to 2000 doing restoration and conservation projects around Mexico</i>



Vocabulary		Materials		
● Abundance ● Conservation ● Habitat Loss ● Landscape ● Fragmentation ● Ecosystem Diversity		● <i>Powerpoint</i> ● <i>15 poster papers (anything bigger than standard printer paper)</i> ● <i>90 blank pieces of paper</i>		
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:				
● How has urbanization impacted pollinators? ● How can urban areas act as places of refuge for pollinators? ● How do pollinators contribute to the overall ecosystem diversity in urban areas?				

Engagement/Introductory Activity:

- Students will come in and we will display [this chart](#) that will show the biodiversity of different bird species in varying environments.
 - The following discussion will be a **THINK-PAIR-SHARE**.
 - Ask students what they can infer from the chart. Ask them to be as specific as possible.
 - What do they think the chart is representing? What could the different colors on the chart represent?
- Transition to explain how there are different types of species of birds living in various habitats. Urban environments are home to many types of bird species.

Exploratory Activity:

- Set up the gallery walk by placing 5 large pieces of BLANK poster papers around the room. On each piece of paper, write the following questions (1 per poster). The questions being written will be made prior to class:
 - • **How do pollinators and humans live together in urban areas?**
 - Through the construction of parks, gardens, houses/sanctuaries, etc. The point is that we can foster a healthy artificial environment for our pollinators by knowing what plants/food they need to survive and thrive and doing our best to build spaces with those plants.
 - • **What aspects of urban living harm pollinators?**
 - *Chemicals:* Pesticides are chemicals that people apply to their gardens or crops to kill particular



pest insects that are causing problems. Unfortunately, pesticides can kill pollinators too, even if people spraying them don't mean to! Herbicides kill weeds, but can also kill native plants if sprayed on them, which shrinks the local food source for pollinators.

- *Disease*: Did you know that honeybees are not native to North America? They are actually from Europe! Beekeepers take care of hives of these non-native honeybees, but if they aren't careful, the honeybees can get sick and then spread the illness to native wild bees. Wooden "bug hotels" are often marketed for bees and other insects to find shelter during the winter, but if not properly cleaned out, they can harbor harmful diseases and make the next bug tenants sick.
 - *Destruction of natural habitats*: As urban areas grow and grow, more and more natural habitats are being destroyed, many of which are home to organisms and pollinators
 - **• Why should humans protect pollinators?**
 - Without pollinators, humans would be very hungry! Pollinators are also food for other wild animals, and help a wide variety of plants to grow. A diverse and healthy ecosystem is important for everyone on the planet! Pollinators are also beautiful and fascinating, and deserve to be protected!
 - **• How can you help pollinators?**
 - Plant a pollinator garden with native plants, Create shelter for pollinators by making small brush piles with sticks, leaving the leaves on the ground in the fall, and leaving dead plant stalks up all winter. If you decide to put up a bug hotel, make sure to clean it out and refresh the materials so pollinators don't get sick, Don't use chemicals in your yard. Instead, opt for natural pest and weed control options, Learn how to identify invasive plants and remove them from your yard, city park, or community garden, If you're going to be a beekeeper, make sure your bees are healthy.
 - **• What are some cool facts you know about pollinators?** Answers will vary!
- Explain to students that there are 5 pieces of paper around the room with questions for them to answer about pollinators. Pass out markers and disperse groups of 5 or 6 around the room. Give students about 2 minutes per question with the timer displayed on the board.
 - Give students about 10-15 minutes total to walk around the room independently and write their thoughts on each piece of paper. Encourage students to come up with their own ideas, and that answers can be anonymous.
 - When the time is up, collect the markers and give students a couple of minutes to walk back through and read the answers from other classmates, ask them to think about what stands out to them.
 - Gather students back together and begin a big group discussion which begins below in the **explain** section.

Explain:

- As a fun way to check for understanding, students will have 5 minutes (which will be displayed as a timer on the board) to draw out their own vision of a healthy pollinator/human relationship. Questions to get them thinking as they draw might be:
 - What do humans need to do to help pollinators thrive?
 - Why do humans need pollinators?
 - What might the world look like without pollinators in our urban areas?
- Have students share these with their elbow partners and then you can ask for 2-3 volunteers to share with the whole class.

Extension Activity/Questions:

- Students will now have 25-30 minutes to work on the building phase of their action project. The expectation for this activity is that students will have:
 - picked out all their materials they need for their project they brainstormed the previous week
 - started construction on their bird feeders with the hope that they will be at least half way done by the end of this activity



- have a space in the classroom where they can store their materials and project neatly until the following week (for our current project, this will be discussed the week before materials are passed out)

Evaluation Activity:

- Due to the nature of today's class, we will take the last five minutes to have a discussion about how their project went today and what goals they have for finishing their project in the next two weeks.
 - Ask students what went well during their building and how this action project connects/relates to the lesson topic today (pollinators in urban areas)
 - Ensure that students have made the connection between the need to protect pollinators and how our projects can make a difference!