

Name _____

Pollinator Diversity Survey

Objectives: Learn the variety of pollinators in a community garden through monitoring a local garden.

Learn the importance of pollinator diversity.

Introduction

Pollinators play an important role in every ecosystem. For humans, more than 1/3 of the food that we eat relies on pollinators for production. For other species, the significance is even greater, as more than ¾ of the world's plants reproduce with the help of pollinators. These pollinator-dependent plants form the base of most food webs, and as a result, almost all species are directly or indirectly influenced by pollinators.

For all the important work they do, most people only know two different pollinators; the honey bee and the bumblebee. The reality is that there are more than 3,000 bee species and more than 40 different kinds of bumblebees in North America alone. Important pollinators besides bees include flies, wasps, moths, beetles, hummingbirds, bats, and other animals. In this lab, you will be investigating the diversity of pollinators found in a local garden.

Materials

Pollinator identification sheets

Data Sheet

Clipboard

Bug Vac

Insect Net

Collection Jars

Procedure

1. Students should form groups of three. Two students will collect pollinators, one will record data. You may want to switch roles during the collection time.
2. Fill out the top of your data sheet with your names, the date, time, location, and weather conditions.
3. Spread out in the garden and attempt to collect as many different species of pollinators as you can, using the bug vac and insect net.
4. Use your pollinator ID sheets to help identify each floral visitor. If you are not able to identify the species, describe the size, color, and appearance on the data sheet. You may need to ask your instructor for assistance with identification.
5. Record the type of flower that each pollinator is visiting when you collect it. If you do not know the flower type, record the color and a brief description.

Results

Using your data sheets, record your total pollinator counts in the data table below. After recording your data, also record the class totals for each group of pollinators.

Pollinator								
Group Results								

Class Results								
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Results, continued

Pollinator								
Group Results								
Class Results								

Graph Using a piece of graph paper or a computer, graph the results. Be sure to label the X and Y axis, and title your graph. Attach the graph to your lab.

Analysis Questions

What was the most common pollinator in this survey? What might be some reasons why it is the most common?

What was the least common pollinator? What might be some reasons it does not occur as frequently?

How many total species of pollinators were observed? Why is it important to have more than just honeybees in an ecosystem? (Describe at least two reasons)

Why are pollinators an important to humans?

Why are pollinators important to ecosystems?

Research has shown that pollinator numbers are declining across the United States. What are some of the reasons their populations are decreasing? (It's ok to look up answers to this question)

What are some ways people can help pollinator populations recover?

Pollinator Survey Data Sheet

Observers: _____ **Date:** ____ / ____ / ____ **Location:** _____

Skies: Clear / Partly Cloudy / Bright/Overcast **Wind:** Calm /Light Breeze / Windy **Temp:**__F

Survey Start Time: _____ **End Time:** _____

[illegible]

[illegible]

Teacher Resources for Pollinator Diversity Survey

- Students should use caution when capturing bees with bug vacs and insect nets. If used improperly there is the potential for stings, insect mortality, and equipment damage. I allow students to capture the bumblebees, but I do the tagging myself.
- It is recommended that you check for any sting allergies. I have never had a student get stung, but it is a possibility. Students with allergies could help record data, or help a group locate pollinators without actually capturing the insects themselves.
- Students do not need to be experts on pollinator identification before completing this activity, but familiarity with the local species will be helpful.
- The activity can be completed using different levels of taxonomic identification, depending on the level of your students. For more advanced students, you may want them to attempt to identify the specific species, but beginners may want to use more general terms (honey bee, bumblebee, butterfly, etc).
- One of the following PDF's should be used by the group to familiarize themselves with the different types of bees before starting the activity.
- <https://www.portlandoregon.gov/parks/article/585770>
- http://www.xerces.org/wp-content/uploads/2010/06/CA_CSM_pocket_guide.pdf
- <http://nevadabugs.org/wp-content/uploads/2017/03/Nevada-Bee-Guide-small-size.pdf>
- **Equipment** All of the equipment for this activity can be ordered on-line.

-Backyard Safari makes a couple versions of the bug vacuum that can be ordered through Amazon or other online retailers.

<https://www.amazon.com/Backyard-Safari-2450904-Bug-Vacuum/dp/B000YJMHLC>

<https://www.amazon.com/Backyard-Safari-Extreme-Bug-Vacuum/dp/B000302AFK>

-The Bug Vacuums are not durable, so students really need to be careful with them.

-Insect nets can be ordered through BioQuip, Amazon, or a variety of other retailers