

# Garden Ecosystems : Plants and Their Pollinators

Gardens (60 minutes) | 3<sup>rd</sup> - 4<sup>th</sup> | 60 student maximum

## About

Come explore the pollinators that call Cheekwood home! We will examine parts of a flower up close, distinguish different features of flowers and why they attract pollinators, the creative ways seeds are dispersed, and we will review the magical process of photosynthesis.

## Objectives

1. Identify and discuss common pollinators of Cheekwood and how they pollinate
2. Identify the parts of a flower
3. Describe the process of photosynthesis and the importance of chlorophyll

## Pre-Visit

Prior to attending the field trip, it is beneficial to review the vocabulary listed and introduce the topics of discussion. We will be walking, using microscopes/magnifying glasses, and exploring our gardens. Please share with us additional topics that you are discussing in class, and we will incorporate them if we can.

## Overview of the Day

1. Greetings and guidelines
2. Break into preassigned groups of 20 students
3. Stations
  - Pollinator (20 min)
    - Guiding questions: Do you see certain pollinators drawn to specific flowers? Are all pollinators the same shape/size? What are some specific attributes of pollinators that help them do their job? How does pollination work? What do certain flower features do for pollinators?
    - Discuss different pollinators' preferences and then design your own pollinator
    - Pollination recreation
  - Flower Parts and Seed Dispersal (20 min)
    - Guiding questions: What parts of the flower do you already know? Why is each part special and important? What are the different ways seeds are dispersed?
    - Use magnifying glasses, microscopes, and models to discover, interpret, and observe the parts of a flower, common pollinators, and flower features
    - Explore samples of different seeds and their end products
  - Photosynthesis and Chlorophyll (20 min)
    - Guiding Questions: What is photosynthesis? What is needed for photosynthesis to occur? How do plants and humans help one another? What makes plants green?
    - Activity

## Vocabulary (A-Z)

Anther - part of the flower that produces and holds pollen

Carbon Dioxide - gas in the air that animals breathe out and plants use to make food

Chlorophyll - green pigment in plants that makes them green

Fertilization - when pollen lands on the stigma of a flower to begin the process of reproduction

Filament - holds up the anther

Leaf - part of a plant attached to the stem or branch that resembles a flat structure, is typically green, and absorbs the sunlight

Ovary - part of the flower that will mature into a fruit

Oxygen - gas in the air that animals breathe in and plants release out

Petal - often the bright colorful part of a flower, helping to attract pollinators

Photosynthesis - process in which plants make their own food using sunlight, water, and carbon dioxide

Pistil - female part of the flower containing the stigma, style, ovary, and ovule

Pollen - fine powder produced by plants, when it lands on the stigma of a flower, it can lead to creation of fruits, seeds, and new plants

Pollinator - animal or insect that moves pollen and aids in fertilization of plants, helping to produce new ones

Pollination - process of moving pollen from flower to flower, allowing plants to reproduce

Sepal - green leaf-like parts at the base of the flower helping to protect the developing flower bud

Stamen - male part of the flower that contains the anther and filament

Stigma - acts as a sticky landing pad for pollen during pollination, held up by style

Style - longer, tubelike structure that holds the stigma and leads to the ovary

## Standards Covered

3.LS1.1 - *use graphical representations to compare how species including humans and other organisms have unique and diverse life cycles*

3.LS2.1 - *obtain information to compare various ways that groups organize to explain the benefits of animal group behavior*

3.LS4.1 - *use evidence to explain the cause and effect relationship between a naturally changing habitat and how well an organism survives*

4.LS2.2 - *using information about the roles of organisms (producers, consumers, decomposers) in an ecosystem, evaluate how those roles are interconnected in a food web, and communicate how the organisms are continuously able to meet their needs in a stable food web*

4.LS2.4 - *analyze and interpret data about changes in the environment to explain how some organisms may survive and reproduce, some may not survive, others move to new locations, yet others move into the transformed environment*

4.ETS1.1 - *categorize the effectiveness of design solutions by testing and comparing them to specified criteria and constraints*

## Post-Visit Book Suggestions

*From Seed to Plant* (Gail Gibbons)

*What's Inside a Flower? And Other Questions About Science & Nature* (Rachel Ignotofsky)

*Pollinators & Native Plants for Kids* (Jaret C. Daniels)

*Plants to the Rescue!* (Dr. Vikram Baliga)

*The Secret World of Plants: Tales of More Than 100 Remarkable Flowers, Trees, & Seeds* (Ben Hoare)

## Background on Cheekwood

Cheekwood is a 55-acre botanical garden and art museum located on the historic Cheek estate. Originally built as the home of Leslie and Mabel Cheek in 1929, Cheekwood is one of the finest examples of an American Country Place Era estate. Since being converted into a museum of art and botanical garden in 1960, Cheekwood has presented world-class art exhibitions, spectacular gardens, and a historic estate unlike anything else.