

## Bee Busy

Tallgrass Prairie Center, University of Northern Iowa

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# Bee Busy

## Adapted from Keepers of the Earth

\* Educators please refer to **New to Nature** for information on becoming comfortable teaching through the outdoors

### Overall Activity

Record observations about flowers, the insects that pollinate them, the pollination process, & review the parts of a flower. Optional: Use a paintbrush to pollinate flowers and revisit them later in the season. Refer to Procedure for detailed instructions.

### Grade Range and Relevant Iowa Standards: 2nd - 5th

- 2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
- 3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.
- 4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
- 5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

### Goals/Objectives:

- Understand the connection between pollination and seed formation
- Understand the various parts of a flower and their functions
- Understand the role of insects in the process of pollination

### Materials:

- Flower diagram showcasing male and female parts (with insect) (see below)
- Outdoors area to visit where flowers can be observed
- Clipboards or books for outside use; paper/pencils
- Paintbrushes
- Small stones or markers for flowers visited

### Procedure:

1. Find a detailed diagram of a male and female flower along with a bee to be displayed to your class in order to explain pollination (flower parts should include stamens, petals, anther, pollen particles, stigma, style, ovary, pistil, sepals) (diagram sample images below)
2. After discussing and explaining pollination, go outside to a field, garden, or visit an area with an abundance of flowers and insect activity
3. Have each student find a flower and sit a few feet away (group or pair students based on flower availability)
4. Observations last for 10-15 minutes, carefully recording what is seen, heard, insects that are visiting, etc. Students should use words, pictures, or whatever helps them learn and remember details about their chosen flower
5. Regroup as a class and share/discuss what was seen. Talk about the colors, shapes, sizes of the flowers, insects, or anything else that is represented by the area
6. Optional: If possible, point out male and female parts of the flower in real time with your class or groups of students. Use paintbrushes and carefully transfer pollen from male stamens to female pistils.
7. Mark some of the flowers visited with small stones and potentially revisit the area later in the growing season. Have other seeds or flowers formed nearby?

- For a general follow-up, have students draw/write out stories and pictures imagining they are an insect traveling from flower to flower in the pollination process

### Extensions:

- Refer to **Iowa's Nature Series** for additional resources on invertebrates, plants, & prairies
- Instead of merely explaining a flower and pollination diagram, consider a guided notes style explanation. Students will participate in active learning to fill in their own diagrams or draw their own diagrams to introduce the activity as explanation is given
- Students will invent their own flower, how it pollinates, the seeds produced, and an insect that helps the pollination process. Create a model with pictures and explanations of these new organisms
- There can be a common thought or misconception that 'bees' refer to simply honeybees. However, there are many native bumblebees that play an important role in pollination. Refer to the **Bumblebee Conservation Trust** page for helpful teacher resources.
- Have a scavenger hunt solely to search for insects outside
- Discuss, research, and report on how we can help our pollinators
  - Tallgrass Prairie Center Pollinator Conservation**
  - Iowa Living Roadway Pollinator Posters**
  - Xerces Society for Invertebrate Conservation**
- Attempt to find a cocoon or chrysalis outside to track in pictures the life cycle of a moth or butterfly

### Prairie Connections (sourced from Iowa's Nature Series and Iowa Living Roadway Trust Fund):

- Invertebrates are necessary for plant reproduction and growth and subsequently provide food and sources of shelter, fuel, and medicine that we depend on for our survival.
- Pollinators depend on prairie plants for food and shelter. Refer to Tallgrass Prairie Center's **Pollinator Conservation** page for information on pollinator partners and how people work together to help these species.
- Ways we can help our bees: reduce mowing & herbicide use in roadside ditches, provide habitat for nest sites, and plant native flowers (natives do not need fertilizer/herbicide and increases habitat for bees along with other invertebrates living underground in the enriched soils)
- There are approximately 118 species of butterflies & over 2,500 moths found in Iowa and many species of grasses and wildflowers act as hosts for them to complete their life cycle. Refer to our observation guides for Irvine Prairie on **Grasses & Wildflowers**.

