

Bee Lesson Plan – Middle School

Recommended Grade Level: 6th-9th grades

Duration: 2-3 class periods

Scientific Background

There are approximately 30,000 species of bees in the world today! Research has found that native wild bees are more efficient pollinators than both bees that have been introduced to an area or other insect species. Doing what we can to help support the native bee populations is essential.

Missourians can help combat colony collapse disorder in several ways. By planting bee friendly flowers and herbs, not cutting weeds, refraining from using chemicals and pesticides, providing a safe place for bees to drink water, and providing bee shelter (plans for bee waterer and bee hotel can be found online).

Objectives

- Students in Missouri educational settings will acquire the knowledge and skills to gather, analyze and apply information and ideas.
- Students will critically examine calculated figures to determine ratio of bee pollination verses human pollination.
- Students will use information gleaned from their analysis to question and reflect on the importance of pollinators and the future of bees in Missouri.
- Students will gain knowledge of pollinators and the reliance of other living organisms on their work.

Learning Standards

This lesson meets the criteria for over 12 Grade-and Course-Level Expectations for Math and Science education, grades 6-9.

Materials

- Paper
- Pencil

Lesson Preparation

1. Organize students into groups or instruct students to work on an individual basis.
2. Make copies of the activity and identification guides as needed for students to familiarize themselves with the subject matter of this problem solving activity.
3. Give students time to study trunk content of instructor's choosing.
4. Present students with the lesson vocabulary words and definitions listed at the end of the plan.
5. Utilize trunk contents such as acrylic block on bees, DVD *Vanishing of the Bees*, and Missouri Department of Conservations Bee Identification guide.
6. Read excerpts of the following article aloud in class:

[http://entomology.ucdavis.edu/News/Honey Bees Are More Effective at Pollinating Almonds When Other Species of Bees Are Present/](http://entomology.ucdavis.edu/News/Honey_Bees_Are_More_Effective_at_Pollinating_Almonds_When_Other_Species_of_Bees_Are_Present/)

Challenge:

- a. Distribute a worksheet to each student.
- b. Ask students to read the front of the worksheet. Give them time to calculate the problems, based on their individual learning styles.
- c. To close out the activity reconvene as a class, ask everyone to turn their worksheets in to you and then have a post-activity discussion.
- d. Student will be able to answer the worksheet questions based on their data and classroom discussion.

Analysis:

- Break students up into manageable groups. Have them compile their data.
- Do the students believe having humans pollinate would be an adequate solution? Why or why not?
- What types of things do the students feel would help increase the ability of pollinators to do their jobs?

Lesson Plan Assessment

- Do the students understand the importance of entomophily?
- Were the students engaged during the challenges?
- Can students utilize the vocabulary?

VOCABULARY:

Adaptation - a change or the process of change by which an organism or species becomes better suited to its environment.

Apidae – largest family within the superfamily Apoidea, containing at least 5,700 species of bees.

Biodiversity – the variety of life in a particular habitat, ecosystem, or the world.

Colony – several thousand adult bees (workers, drones, and a queen), that cooperate in nest building, food collection, and brood rearing.

Colony Collapse Disorder – the phenomenon that occurs when the worker bees in a colony disappear, leaving the queen, food, and immature bees.

Ecosystem – a biological community of interacting organisms and their physical environment.

Entomophily – pollination by insects, including bees, ants, wasps, butterflies, moths, beetles, flies, and more.

Pollinator – an animal that causes plants to make fruit or seeds by moving pollen from one part of a flower to another.