

DICKINSON COUNTY NATURE CENTER

GRADE 5 — “WHAT IS ALL THE BUZZ ABOUT?”

Core expectations

5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources and environment.

5-PS3-1 Use models to describe that energy in animals’ food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

5-LS2-1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Activity Time

One 50-minute session

Contact

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Program Alignment with Iowa Core Curriculum

Disciplinary Core Ideas

- **LS1.C Organization for Matter and Energy Flow in Organisms:** Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion.
- **LS2.A Interdependent Relationships in Ecosystems:** The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organism, such as fungi and bacteria, break down dead organisms (both plants or plant parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different types are able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem.

Investigative questions

- Who are our native bees?
- Why is native bee health a concern?
- What factors are affecting bee health?
- How can the community help increase our native bee populations?

Investigative phenomena

Students will be able to investigate the world of native bees of Iowa by learning from a naturalist about both cavity- and ground-nesting bees. Students will then be able to create their own bee home.

Practices (SEPs)

- Students and the naturalist will carry out an investigation about what pollination is.
- Students and the naturalist will make observations about the differences between native bees and honeybees.
- Students will create a native bee home by using tools and replicating a model.

Cross Cutting Concepts students will identify:

- Structure and function of a flower
- Structure and function of bee habitats
- Cause and effect of habitat loss on our native bee populations

Supplies

All supplies brought by the nature center unless otherwise arranged.

- Pre cut 4x4x6 board – 1 per student
- Precut/predrilled roof – 1 per student
- 4 drills
- 4 drill bits
- 4 screwdriver heads
- Screws (2 screws/house)

Program Overview

Background

Spring and summer in Iowa bring to mind fields and forests full of blooming plants. As the flowers emerge, so do our local pollinators. These pollinators include butterflies, moths, beetles, honeybees and almost 300 native bees in the state of Iowa. Virtually everywhere you see a flowering plant, this plant was pollinated by one of these wonderful creatures. However one creature really stands out as environmental superhero, our nearly 300 species of native bees! With nearly 1 out of 3 foods being pollinated by honeybees and native bees, and foods like tomatoes, blueberries, peppers, eggplants relying on **sonication** or buzz pollination from our native bees to thrive, these insects are truly superheroes.

Although these creatures are crucial to our ecosystem, they are facing devastating decline throughout the world. This decline is due to a number of factors such as habitat loss, pesticide use, climate change and competition from non-native bees. Many communities across the globe are looking to science to help bring our native bee populations back. As we speak, many people are creating pollinator gardens that allow for adequate forage, creating habitat corridors, reducing their pesticide use, and helping to inventory bee species. As we inventory and learn about bee species we are finding that 30 percent are cavity-nesting bees and 70 percent are ground-nesting bees. One method of helping native bees is by creating bee nesting houses for individual properties for cavity nesting bees.

Procedure

- 1) The naturalist will first introduce to students the concept of pollination, the anatomy of a flower and the different forms of pollination.
- 2) After introducing these very important concepts, the naturalist will dive into who are our native pollinators are by showing students large color images of our bees, butterflies, beetles, and flies that help in pollination
- 3) After showing images of our native and non-native pollinators, introduce the difference between the non-native honeybee and our native bees.
- 4) Explain that this lesson will focus on native bees. Show students pictures of our native bees and the plants they forage on.
- 5) Explain to students that their populations are declining and how people are helping these populations to recover.
- 6) After a 15-minute lesson on native bees, explain to students that with help they will be creating native bee homes for cavity nesting bees.
- 7) Set out four drilling stations — two stations to drill holes in the block and two stations to screw on roofs.
- 8) Pass each student a block and instruct them to get into four equal lines behind each station.
- 9) At two of the stations, have students drill 10-12 holes in block, and at the other two have students screw on their roofs.
- 10) Encourage students to take the time to paint their bee home in a vibrant color to help attract bees to their property.