Teacher Resources: The Buzz on Bees

Honeybees are social insects, living in colonies of many thousands of bees. Working together in a highly organized way, honeybees accomplish remarkable feats of construction, navigation, decision-making, defense, and honey-making – far beyond what an individual insect could do on its own. Many fascinating adaptations, both physical and behavioral, are important in the life and work of these busy, buzzy insects.

UNIT VOCABULARY

Nectar	Pollen	Pollinator
Queen bee	Worker bee	Drone
Antennae	Simple eye	Compound eye
Proboscis	Honey stomach	Pollen basket
Stinger	Wax Gland	Beehive
Honeycomb	Hexagon	

OUTSIDE YOU GO

A class garden can provide hours of engaging learning across the curriculum, though they can be tricky to manage in the summertime. Partnering with your local library might be just what you need to keep your garden in check during the summer months. The children's librarian might offer summer programming that involves using the garden, and connecting it to children's literature and cookbooks. Children enrolled in the library programs, also can water and weed, to keep the garden healthy!

FOLLOW UP IDEAS

Morning Meeting: During your Morning Meeting activity, you can review this unit by practicing bee dances. Your class can pretend to be a group of scout bees. Point out pretend sources of nectar that are close and far away, and have the class decide whether to do a *circle dance* (for close "nectar sources") or a *waggle dance* (for far away "nectar sources"), then have fun dancing!

Math: The study of bees ties in so nicely with the study of **geometry** due to the **hexagonal** cells in a honeycomb. Explore or review hexagons and other **shapes** with younger students, and **symmetry** and **congruence** with older students.

Language Arts: The buzzing sound of bees is a perfect jumping off point for exploring onomatopoeia, which is an example of a **word choice that shapes meaning or tone**. Share examples of **poems** that contain onomatopoeia, and circle the onomatopoeia words as you **read** them together. Then, give students practice with circling onomatopoeia words as they read more poems to themselves. Next, create a class list of onomatopoeia words, and have each student choose 3 words to put in poems they **write**. Students can read the poems aloud, as the rest of the class **listens**.

NATURE JOURNALS

Have the children find, watch and sketch a bee and its habitat. Ask them to make some notes about what they observe the bee doing. If there are no bees but other pollinators are present, observe those. Afterward have children share their observations with a partner or small group.

BOOKS FOR KIDS

Micucci, Charles, *The Life and Times of the Honeybee*, Houghton Mifflin, 1997.
Mortensen, Lori, *In the Trees, Honey Bees!,* Dawn Publications, 2009.

THE BUZZ ON BEES ALIGNMENT WITH NEXT GENERATION SCIENCE STANDARDS

When working with your students on the following Disciplinary Core Ideas (DCI), consider using and making connections to activities from this Four Winds unit to support students' learning. The DCI's listed here are taken from Grade Band Endpoints in *A Framework for K-12 Science Education*. Additionally, our activities give children opportunities to engage in many of the Science and Engineering Practices and reflect on the Crosscutting Concepts as identified in the Next Generation Science Standards.

Grades K-2 Disciplinary Core Ideas

- **LS1A:** All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find and take in food, water and air. p.144
- **LS1B:** Plants and animals have predictable characteristics at different stages of development. Plants and animals grow and change. Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive. p.146
- **LS1C:** All animals need food in order to live and grow. They obtain their food from plants or from other animals. p.147
- **LS1D:** Animals have body parts that capture and convey different kinds of information needed for growth and survival – for example, eyes for light, ears for sounds, and skin for temperature or touch. Animals respond to these inputs with behaviors that help them survive (e.g. find food, run from a predator). p.149
- **LS2A:** Animals depend on their surroundings to get what they need, including food, water, shelter, and a favorable temperature. Animals depend on plants or other animals for food. They use their senses to find food and water and their body parts to gather, catch, eat, and chew the food. Plants depend on air, water, minerals (in the soil), and light to grow. Animals can move around but plants cannot, and they often depend on animals for pollination or to move their seeds around. p.151
- **LS2D:** Being part of a group helps animals obtain food, defend themselves, and cope with changes. Groups may serve different functions and vary dramatically in size. p.156

Grades 3-5 Disciplinary Core Ideas

- **LS1A:** Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior and reproduction. p.144
- **LS1B:** Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles that include being born (sprouting in plants), growing, developing into adults, reproducing, and eventually dying. p.146
- **LS1C:** Animals and plants alike generally need to take in air and water, animals must take in food, and plants need light and minerals; p.148
- **LS1D:** Different sense receptors are specialized for particular kinds of information, which may then be processed and integrated by an animal's brain, with some information stored as memories. Animals are able to use their perceptions and memories to guide their actions. Some responses to information are instinctive – that is, animals' brains are organized so that they do not have to think about how to respond to certain stimuli. p.149
- **LS2A:** The food of almost any kind of animal can be traced back to plants. p.151-152

Grades 6-8 Disciplinary Core Ideas

- **LS1A:** Unicellular organisms (microorganisms), like multicellular organisms, need food, water, a way to dispose of waste, and an environment in which they can live. p.144
- **LS2A:** Organisms and populations of organisms are dependent on their environmental interactions both with other living things and with nonliving factors… Mutually beneficial interactions, in contrast, may become so interdependent that each organism requires the other for survival. p.152
- **LS2D:** Groups may form because of genetic relatedness, physical proximity, or other recognition mechanisms (which may be species specific). They engage in a variety of signaling behaviors to maintain the group's integrity or to warn of threats. Groups often dissolve if they no longer function to meet individuals' needs, if dominant members lose their place, or if other key members are removed from the group through death, predation, or exclusion by other members. p.157

THE BUZZ ON BEES ALIGNMENT WITH COMMON CORE STANDARDS

In addition to science content, activities in this unit also can help students to practice the following mathematics and language arts concepts. The Common Core Standards listed here are in addition to the ones that our activities typically address, as listed in the Four Winds document, *The Nature Program: Alignment with Learning Standards.*

Grades K-2 Common Core Standards

- **Mathematics Standard K.G:** Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

Grades 3-5 Common Core Standards

- **Mathematics Standard 4.MD:** Measure angles in whole-number degrees using a protractor.