Lesson 4 How Bees Make Honey

Learning Objective: Students will understand how essential bees are as pollinators and will gain an understanding of bee biology and behavior.

Question: How do bees make honey?

Introduction: The expression "busy as a bee" is very accurate because honey bees are amazing, hard working little creatures. Have you ever heard that honey is bee vomit? Not true! It doesn't come from their food stomach, but from a second stomach known as the honey stomach. When a honey bee visits a flower, she laps up the flower's sugary liquid (nectar) and stores it in her honey stomach. When her honey stomach is full, she heads back to the hive where she passes the nectar, mouth to mouth, to another bee who continues the process of converting the nectar into honey. We could call it regurgitation, but NOT vomiting! The second bee passes it on to a third bee, and so on, gradually turning the nectar into honey. It's a lot of work, as it takes about eight to ten bees, working their entire lives, to make just one teaspoon of honey!

Facilitating the Activity:

- Have your students learn how honey bees make honey by watching the video entitled How Do Bees Make Honey? at www.youtube.com/watch?v=nZlEjDLJCmg.
- Have them complete the *Honey Production* worksheet.
- This video worksheet could be used as a graded homework assignment, an in-class individual or small group assignment, or discussed with an entire class.

Classroom Discussion: In addition to going over the questions in the worksheet, here are some other suggested questions you might discuss with your students after completing the video worksheet.

- What are enzymes, and what do they do?
- In the video, the speaker said that a bee will vomit nectar into the mouth of another bee. Do you agree with his use of the word "vomit?" Explain.

Additional Information: An excellent resource for teachers can be found in the Purdue University extension publication entitled *Protecting Pollinators in Home Lawns and Landscapes*, available for download at https://extension.entm.purdue.edu/publications/POL-1/POL-1.pdf.

Next Generation Science Standards: TBD

Fly Higher: You or your students may actually want to try your hand at keeping bees. To get started, check out the Purdue Extension publication entitled *4-H Beekeeping Division II* at https://www.extension.purdue.edu/extmedia/4H/4-H-586-W.pdf. Another useful reference is entitled *Advanced Beekeeping Methods* at https://mdc.itap.purdue.edu/item.asp?item_number=4-H-593-W.

Glossary:

- **pollinating** – the act of honeybees carrying pollen from one flower to another
- **nectar** – the sweet liquid produced by flowers that bees make honey out of
- **regurgitation** – commonly known as "throwing up"
- **carbohydrates** – a class of molecules such as sugars and starches
- **larvae** – immature developing animals such as a caterpillar that eventually develops into a butterfly