



## A Bee's Life

### **Objective:**

1. Students will identify the form and function of a honeybee, understand the importance of bees in the environment and express a general knowledge of the life-cycle and behaviors of bees.
2. Students will demonstrate an understanding of the contributions honeybees make to the environment.

### **Performance Objectives:**

**Grade 1:** SS Strand 4 – Concept 1: PO1, 2, 3  
Concept 2: PO1, 2; Concept 3: PO1, 2, 3  
NGSS: 1 LS1.A; LS1.B

**Grade 2:** SS Strand 1 – Concept 1: PO1, 2  
Strand 4: Concept 2: PO1, 2, 3  
NGSS: 2 LS2.A; LS2.D  
CCSS: 1.W. 2; 1.W. 3; 1. W. 8

### **Background Information:**

Have you ever heard the buzzing of a bee? Well, bees have been buzzing around the earth for millions of years. Bees are found in most parts of the world and are responsible for much of the food we eat.

Bees provide an important service, they **pollinate** about one third of all the food in America. Some of the crops that honeybees visit to pollinate are apples, pears, cherries, plums, cucumbers and blueberries.

Honeybees, like the ones at **Butterfly Wonderland**, are called pollinators because they spend their life gathering pollen and taking it from one flower to another flower. Pollination is what flowers and other plants need to help them create seeds for new flowers and plants to grow.

**Grades: 1 - 2**

### **Key Vocabulary:**

- Pollinate
- Proboscis
- Thorax
- Relatives
- Mandible

### **Related Literature:**

*Honeybees*  
(Penguin Reader)  
Joyce Milton

*The Life and Times  
of the Honeybee*  
Charles Micucci

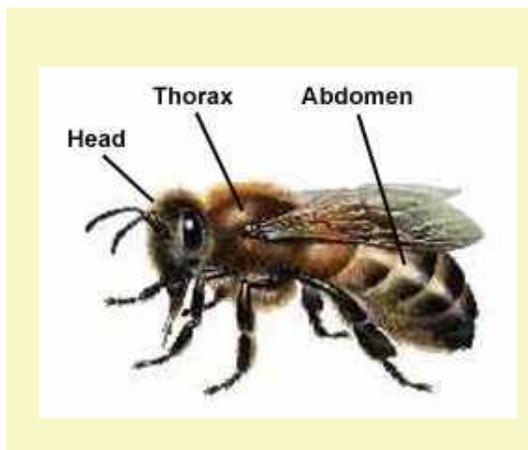
*Honeybee*  
Gail Gibbons

Though bees are very small in size, compared to a person, bees have a big job to do in the environment in which we live. Along with being pollinators, honeybees have another “tasty” job. They make honey! Honey is very sweet and can be found in many of the foods we eat. The busy bees have to spend most of the day finding flowers and plants to drink up nectar and bring it back to the hive to make honey. Nectar is the liquid found inside of the flowers. Since honeybees have a good sense of taste, they can find the sweet nectar of plants and carry it home to the hive in their honey stomach. Scientists think it may take as many as 2 million flowers to make one pound of honey. That is a lot of work for the honey bees.

Bees are very interesting insects. Bees, like other insects, have six legs and three main parts to their body. The three main parts are the head, **thorax** and abdomen. The brain is located in the head of the bee. The head also has two sensory antennae to help with smelling, tasting and touching. The antennae are used to figure out the size that the cells of the honeycomb need to be while they are being made. Bees also use their antennae to touch each other in the “bee dance.” The dancing is another way bees have of communicating with each other.

Bees have compound eyes made of many “repeating” eye parts. These eye parts allow the bee to see effectively in its search for food. Bees and humans do not see things the same way. Humans can see all of the colors of the rainbow while bees can see only about six colors and red is not one of them.

The mouth part of the bee has a tube-like tongue called a **proboscis** which is used to collect nectar from plants. The two jaws of the bee are called **mandibles**. Bees do have a sense of taste, and they can tell the difference between sweet, sour, bitter and salt. No wonder they love the sweet taste of nectar.



The queen bee produces pheromones, chemical substances, which help the bees in the colony find their way back to the right hive. The pheromones signify harmony in the hive. As the queen ages and the pheromones wear off, the bees will seek to make a new queen.

Bees also have four wings which are very thin pieces of the bee’s skeleton. Each set of wings, the forewing and hind wing, is hooked together to support the bee in

flight. The wings on a bee move very fast creating the buzzing sound and allowing the bees to fly. Bees can fly about 15 miles per hour and may travel to around 50 to 100 flowers a day.

All of the bees in one hive are **relatives**. The hive has a queen bee, the worker bees and the drones. All of the bees have duties and chores to do in the hive. The queen bee is the mother of the bees in the colony and is in charge of laying eggs to keep the hive growing. She is the largest bee and can lay as many as 2,000 eggs a day as she builds her colony of relatives. A queen bee can live about five years.

The worker bees are the smallest bees but have a very big job. They gather food, make honey, tend to the eggs, build the honeycomb and guard the hive. All of the worker bees are female, but they do not lay eggs. The worker bees are also in charge of feeding the queen her royal jelly. When they are young, the workers bees tend to the duties inside the hive. As they get older they are sent out of the hive in search of pollen and nectar. Workers are really busy bees.

The male bees in the colony are called drones. The drones mate with the queen to produce the eggs that make more bees for the hive. Drones are a little larger than workers and their bodies are more rounded. Drones have very large eyes that connect at the top of their head and smaller antennae. These bees live only a few weeks in the colony.

The colony of bees has one central purpose, keep the family growing. Once the queen bee lays her eggs, the eggs go through four stages of life. The egg is the first stage. In about three days, the egg becomes a larva. The larva will be fed by the worker bees until it is ready to spin a small cocoon over its body. While in the cocoon, the larva becomes a pupa. This means that the changes are being made for the next stage of life, the adult bee. Adult bees take their place in the hive depending upon what member of the hive they have become. A hive of honey bees can have from 20,000 up to 100,000 members. That's a lot of bees!



Bee eggs and larva



Bee pupa

Sources: Nova: Tales from the Hive (1998); Utah Bee Keepers Association; University of Arkansas division of Agriculture; Arizona Department of Agriculture (Public domain photos)

## **Procedures and Pre-Activities:**

1. State the learning objectives.
2. Ask open-ended questions related to bees. (Example: Where are bees found? Have you ever watched bees collect pollen? Have you eaten honey?)
3. Read a book about bees to the students. (See suggested list)
4. Discuss the story and the relationship of bees to people and the environment.
5. Present the background information on honeybees and show photos of bees.
6. Do “A Taste of Honey” activity.

**Materials:** Large paper plate (one for each student)  
Popsicle sticks (four for each student)  
Paper bowls and plastic spoons (4 of each)  
4 different types of honey  
Wet wipes (for hands)

**Activity:** Have 4 different types of honey in plastic bowls with a spoon in each bowl. Label the bowls 1-4 as this is a taste test. Use large paper plates and have students divide their plate into 4 sections (use pencil). Number each section on the edge of the plate, 1-4. Each student gets 4 Popsicle sticks, one to taste each type of honey.

Students will put a small amount of the honey, using the spoon in the honey, on their paper plate. They then taste each sample of honey (using Popsicle sticks) to try to tell the flavor. Have a list of the types of honey written on the white board and ask them to try to figure out what numbered sample matches the name of the flavored honey. (Ex: clover honey, orange honey, etc.)

7. Discuss the parts of the honeybee. Hand out the activity sheet “Label the parts of the bee.” Students complete the activity.
8. Hand out the activity sheet, Name that Bee, and have students complete the activity. (Answers: 1. Queen; 2. Drone; 3. Worker)

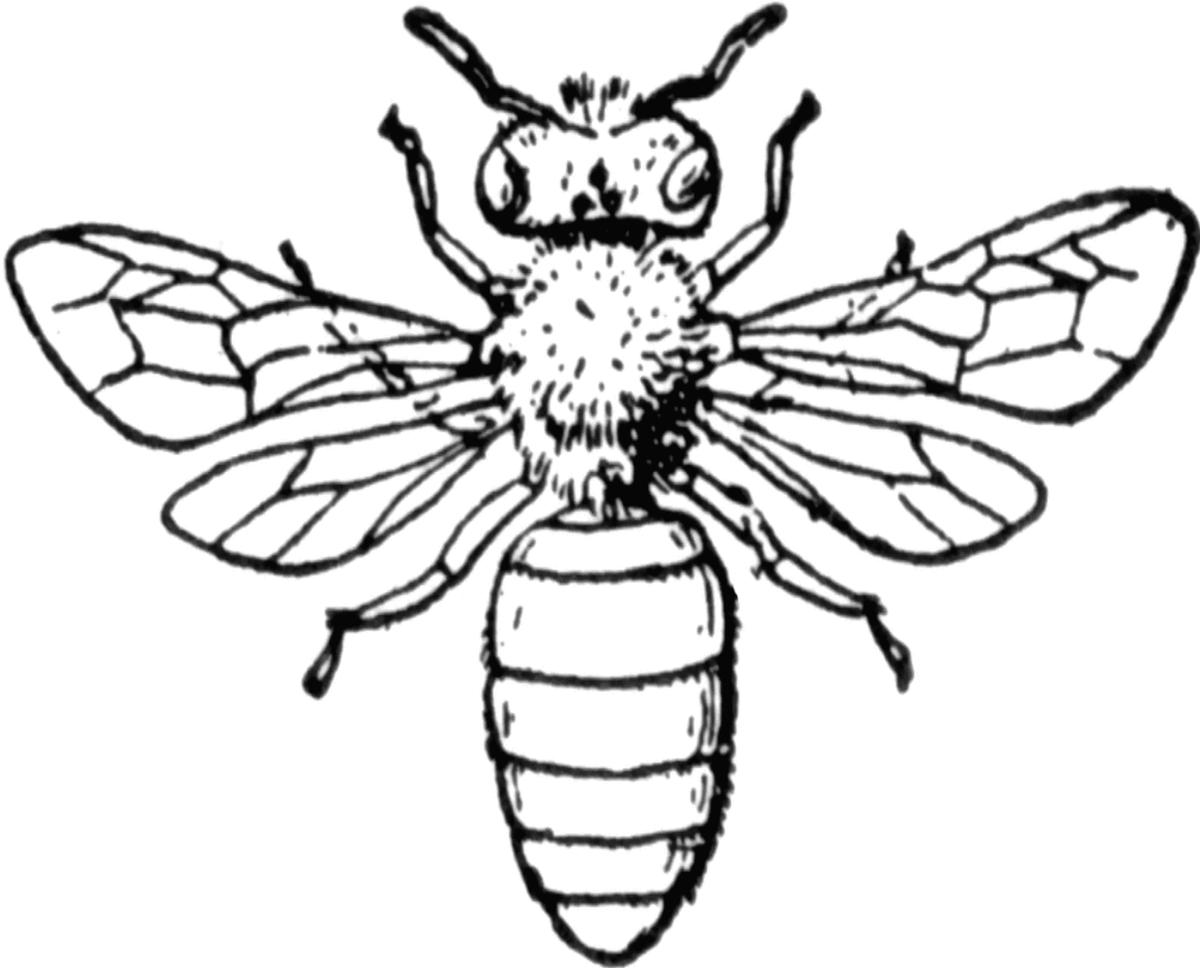
## **Reflection and Assessment:**

After visiting **Butterfly Wonderland**, discuss the experience and ask students to describe their observations of the honeybees and the hive.

### **Activity:**

1. Students write a short story about the picture of the bee on the flower.
2. Students draw and label the life cycle of the bee.

## Label The Parts Of The Bee



What are the distinctive features of the following:

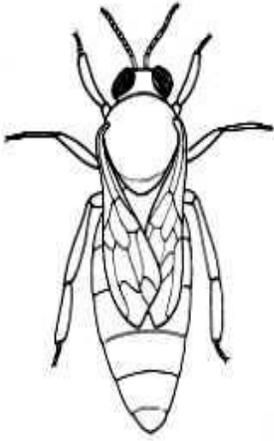
1. Legs \_\_\_\_\_

2. Thorax \_\_\_\_\_

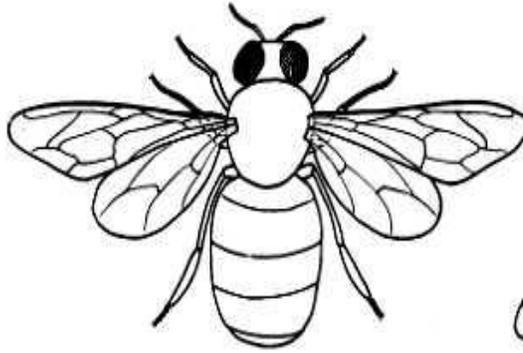
3. Abdomen \_\_\_\_\_

4. Antennae \_\_\_\_\_

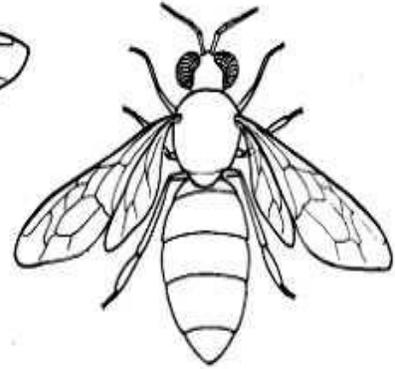
# Name That Bee



1. \_\_\_\_\_



2. \_\_\_\_\_



3. \_\_\_\_\_

What are the distinguishing characteristics of each type of bee?

1. \_\_\_\_\_  
\_\_\_\_\_

2. \_\_\_\_\_  
\_\_\_\_\_

3. \_\_\_\_\_  
\_\_\_\_\_

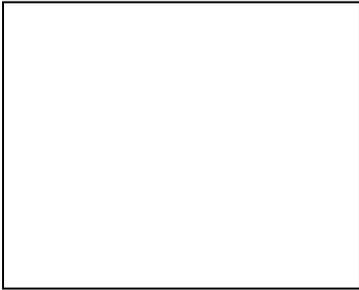


## The Life Cycle of the Honeybee

In the spaces below, draw the 4 stages in the life cycle and label each stage.

**Draw**

**Label**



## A Bee's Life



A Bee Buzzing (A Public Domain)



Collecting Nectar and pollen (Public domain photo)



Collecting Honey (Public domain photo)



Honeybee insect *apis mellifera* (Public domain photo)