

## The Life of Bees

### **Scientific Background**

Honey bees are social insects. They live together in a hive, and each bee has its own job within the community. Bees have a matriarchal society, which means the colony is headed by a queen. The queen can live up to three years. Her primary job is to continually lay eggs.

Most of the queen bee's offspring are infertile female bees, called worker bees. The rest of the offspring develop into male bees, called drones. Worker bees tend the larvae and collect nectar from flowers to make honey. Drones will mate only with queens from other hives. Drones die or are killed after mating.

Honey bees produce honey as food for the hive during the long months of winter when flowers aren't blooming and no nectar is available. To make honey, a worker bee collects nectar, which it stores in an internal honey sac. Worker bees bring the nectar back to the hive and transfer it from tongue to tongue to other bees inside the hive. Then a worker bee spreads a drop of nectar on the roof of a cell in a comb. Worker bees fan their wings over the nectar so the moisture evaporates. Finally, worker bees cover every cell with a thin layer of wax.

### **Vocabulary**

- |                 |              |
|-----------------|--------------|
| ▪ colony        | ▪ drone bee  |
| ▪ hive          | ▪ honey      |
| ▪ infertile     | ▪ larva      |
| ▪ mate          | ▪ nectar     |
| ▪ pollinate     | ▪ queen bee  |
| ▪ social insect | ▪ worker bee |

*Vocabulary definitions can be found in the **Backyard Bugs** Glossary.*

### **Thinking Question**

Why is it important that every bee has a specialized job? What do you think would happen if:

- the queen bee didn't lay eggs?
- worker bees didn't tend the hive?
- worker bees didn't collect pollen?

### ***Exploratory and Extension Activities***

**Additional Exploratory and Extension activities are available in the *Backyard Bugs Teacher's Guide*.**

#### **Bee Mobile**

Have students create a mobile to represent the families of bees.

List the more commonly known Order Hymenoptera species that are classified as bees: honey bees, carpenter bees, bumble bees, Africanized honey bees, and European wasps. Show students photos of the latter species of bees. Have students choose at least five species to use for their mobile. Provide construction paper, clear plastic from disposable cups (for wings), magic markers, pipe cleaners, scissors, thread, glue and hangers. Small paper fasteners can be used to allow wings or other body parts to rotate. Display the finished mobiles in the classroom.

#### **Bee Words**

Students can use the study of bees to work with alphabetization, analogies and scanning newspapers.






Provide a jumbled list of bee-related words, such as abdomen, antennae, barb, bee, bee dance, beekeeper, colony, comb, complete metamorphosis, compound eye, drone, hive, honey, honeycomb, insect, larvae, nectar, pollen, pollen basket, pheromones, pollination, queen bee, scout bee, stinger, swarm, wax, wings, worker bee. Ask students to alphabetize the list.

Then use bee words to discuss analogies. For example, bees are to a hive as people are to an apartment house; honey is to honeycomb as food is to refrigerator.

Have students read their alphabetized list of bee related words. Use newspapers and magazines to find and clip out words that can be used to demonstrate an analogy related to other animals or people. Paste the clipped words on a sheet of paper. Under each word, have students write the analogy; for example, clip out the word cow. Write, "bee is to hive as cow is to herd."

Name: \_\_\_\_\_

### The Life of Bees

<b>What are the queen bee's jobs in the hive? How is the queen different from the worker bees?</b>	
 <p>A Queen Bee with Workers</p>	
<b>What are the worker bee's jobs in the hive? What does a drone bee do?</b>	
 <p>A Drone Next to Two Worker Bees</p>	
<b>How do bees use the cells of the honey comb?</b>	
 <p>A Cell Inside the Comb</p>	
<b>Why do bees visit flowers?</b>	
 <p>Worker Bee in Flower</p>	
<b>How do bees communicate with each other?</b>	
 <p>Inside the Hive</p>	

## Answer Key The Life of Bees

**What are the queen bee's jobs in the hive?  
How is the queen different from the worker bees?**



**A Queen Bee with  
Workers**

*The queen bee secretes a pheromone that tells the other bees that the queen bee is alive and well. She lays up to 1,500 eggs per day. The queen bee is larger than the worker bees. If a female larva is fed special food called royal jelly, she becomes a queen bee.*

**What are the worker bee's jobs in the hive?  
What does a drone bee do?**



**A Drone Next to Two  
Worker Bees**

*The worker bees are all female bees but they usually do not lay eggs. Worker bees do almost all the chores in the hive. They gather pollen or nectar, guard the entrance, clean the hive, build the comb, make honey, tend the queen and feed the larvae. They even fan the hive with their wings to keep it cool on a hot summer day.*

*Only a few drones or male bees live in each hive. Thousands of drones from many bee colonies gather in one place. Queens fly there too. Usually drones do not mate with the queen from their own colony. Drones die or are killed after mating.*

**How do bees use the cells of the honey comb?**



**A Cell Inside the Comb**

*The queen bee walks from cell to cell to lay a small white egg in each one. The cells are used for raising the larvae. When the larvae turn into pupae, the worker bees close off the cell with wax. Pupae use the stored fat and tissue from the larval stage to change into adult bees. When the pupae have changed into adult bees they chew their way out of the cells and start working. The cells are also used for storing nectar and pollen. Honey is made inside cells. Adult bees also rest in them.*

## Why do bees visit flowers?



**Worker Bee in Flower**

*Bees visit flowers to gather nectar and pollen. Nectar is a sweet liquid that the bee laps and sucks up with her tube-like tongue. The female worker bees make honey from nectar in the bee hive. Honey bees also gather pollen grains. The bee uses its hind legs to scrape off the pollen grains that stick to its abdomen and presses the pollen grains into the pollen basket on the hind leg. Female worker bees also pollinate flowers by carrying pollen from flower to flower.*

## How do bees communicate with each other?



**Inside the Hive**

*Bees communicate with each other with pheromones. Pheromones are body chemicals that allow bees and other animals to talk to each other by smell. Bees smell pheromones and other scents with their antennae and can tell whether a bee is from the same hive, is a worker bee or a queen bee, or is warning about danger. Bees that have found a new or good source of nectar or pollen tell other worker bees in the hive where to find it by performing dances. This is called the dance language of bees.*