







Life in the Hive

Bees live in a **caste** system. This means that each member has a specific job that is decided at **birth**. There are **3 jobs** for bees, queen, worker and drone.

Most bee colonies have a **carrying capacity** of around **25 000** bees. Almost **95%** of these bees are **worker bees**, with the remaining **5%** being **drones**.

Type of adult bee	What they look like in a honey bee colony	What they look like in a bumble bee colony
Queen		
Worker		
Male		

The Queen

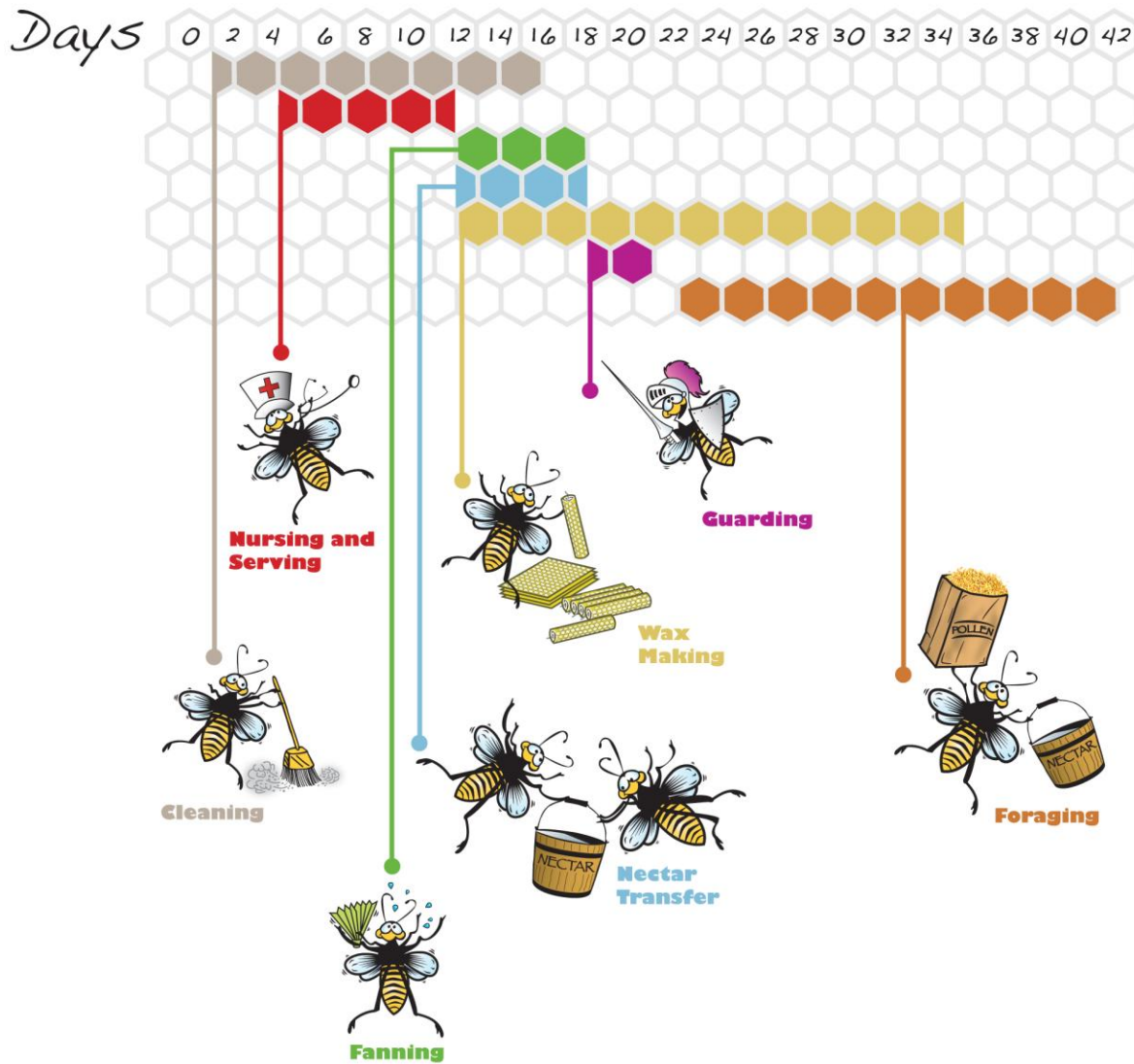
The social structure of a bee hive is a family headed by a **queen**. She is the most important type of bee. The queen can live up to **3 years** and during this time continually lays eggs. The queen mates during **nuptial flights** made shortly after emerging. She may mate with **7-17 male drones** and receive up to **5 million individual sperm** which are stored in a pouch called the **spermatheca**. She accesses the sperm throughout her life fertilizing eggs as needed by the hive. If she is not doing a good job she could be **attacked** by workers and replaced.

The Workers

Workers are **second** more important in the hive. They perform many tasks. Most importantly, they **tend** to the queen bringing her **special food** and **grooming** her. They also build combs, look after babies (brood), seal and cap honey cells, remove dirt, store pollen, ripen honey and guard the hive.

Most bees are worker bees and they are **all female**, but cannot have babies. They are **altruistic**, because they take care of the queen at the expense of being able to reproduce. Workers have a short lifespan of about **30 days**. During this time they change roles as they mature.

Worker bees can be called **housekeepers**, because they are responsible for the upkeep of the hive, or as **foragers**, because they collect nectar, pollen and water. The main cause of death of worker bees is **burnout**. That is, their wing muscles only have a certain amount of flight, around **800 kilometers**, when they reach this point they no longer work and the bee cannot survive.



The worker bee labour is divided based on **age of the worker**. The worker begins life taking care of the **storage cells** of the hive, then moves on to **brood care (babysitting)** and food storage and ends its life as a **forager**. By having this type of work schedule it extends the life of the workers because the younger bees spend their time inside the hive, protected. Once they become foragers, they are more likely to be eaten or have wing burnout because they are outside the hive.

The Drones

The drones are the **only males** produced by the queen. There aren't many of them, but their role is important. They are **mates** for the queen. Their **lifespan** is very short, less than **25 days**. After mating with the queen their **abdomens explode** resulting in a quick death. If resources are limited worker bees will force "lazy" males out of the hive or **kill** them. Also, since drones spend a lot of time outside, they are susceptible to **predation and bad weather**. Drones will begin mating flights **8 days** after being born, and after **12 days** they may perform up to **5 mating flights** per day.

Name: _____

Life in the Hive Questions

1. **Rank** the types of bees in order of importance (1 mark)

1 -

2 -

3 -

2. How many bees can a hive hold? (1 mark) _____

3. What is the percentage of **workers** _____, and **drones** _____ that a queen gives birth to? (2 marks)

4. What happens if the **Queen** does not do a good job? (2 marks) _____

5. What does **altruistic** mean? (2 marks) _____

6. What is the **lifespan** of worker bees? (1 mark) _____

7. Why do young **workers** stay in the hive? (2 marks) _____

8. What is the primary cause of **death** for worker bees? (1 mark) _____

9. Use the chart to answer the following questions

a. How many days are worker bees considered **brood**? (1 mark) _____

b. How old are they when they start **orientation** flights? (1 mark) _____

c. How many days does the average worker bee spend **foraging**? (1 mark) _____

10. What is the role of **drones**? (1 mark) _____

11. What happens to **males** after mating? (1 mark) _____

12. What happens to the drones if there is not enough **food**? (1 mark) _____

13. What is the average **lifespan** of a drone? (1 mark) _____

In the chart below make a summary of the habits (4 each) for each type of bee. (Examples are given)

Queen	Worker	Drone
<ul style="list-style-type: none">Controls hive	<ul style="list-style-type: none">Female but cannot reproduce	<ul style="list-style-type: none">Only males