



ALABAMA

Ag Mag

AGRICULTURAL GAZETTE FOR KIDS



Ag in the Classroom
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BEE & HONEY



What's The Buzz?

Honeybees are extremely important insects because they are **pollinators**. They have been one of mankind's most valuable insects for thousands of years. They collect and transfer **pollen** and **nectar** from flower to flower. Honeybees help create nearly one-third of the world's food supply by pollinating 95 different crops. With the nectar they gather from flowers, they produce the only food made by insects and eaten by humans, **honey**. Bees also produce **beeswax**, which is found in candles and other useful items.

DID YOU KNOW?

The queen honeybee is Alabama's official state agricultural insect.



Honeybees pollinate a very important crop grown in Alabama – cotton. You can thank honeybees the next time you slip on your favorite T-shirt!



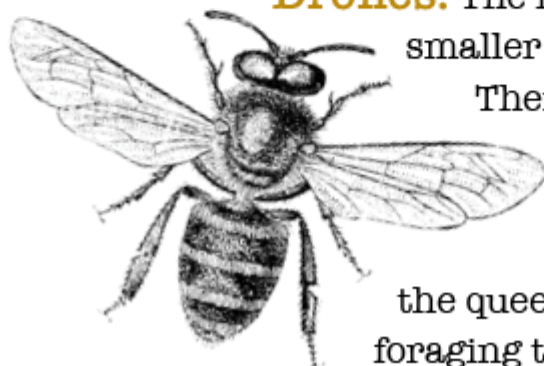
THE BEE COLONY

There are 3 types of honeybees in a colony:



The queen: A colony often has one queen, the only fertile female in the colony. She gives birth to every bee in the colony and lays over 1 million eggs in her lifetime.

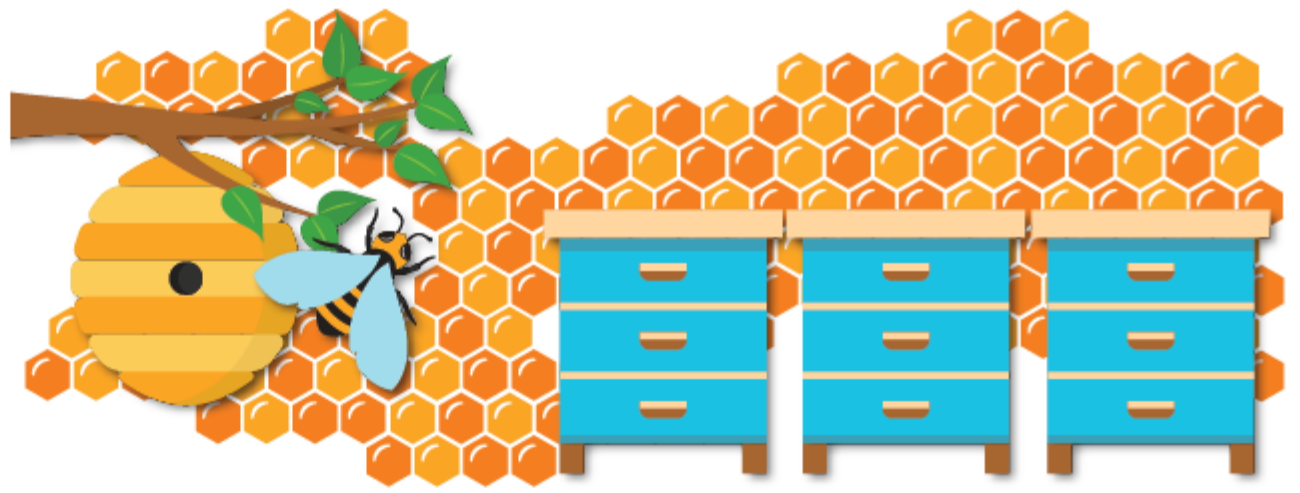
Workers: These infertile females make up 85% of the colony and do all the hard work collecting nectar and making honey. There are often tens of thousands of worker bees in one colony.



Drones: The male population of the colony is a smaller group of only a few hundred. Their primary job is to mate with the queen bee to keep the colony thriving. Drones have huge eyes to help them locate the queen but don't have stingers or foraging tools.



Skyscraper with "honeycomb" windows



The Beehive

Scholars have studied the engineering and design of the honeybee hive for over 2,000 years. Some suggest the **hexagon** shapes used in the beehive hold more honey than any other shape because they break up flat space into smaller units. They also use the least amount of wax. The efficiency of the hexagon shape inside the honeycomb has inspired humans in the design of buildings, transportation and storage.

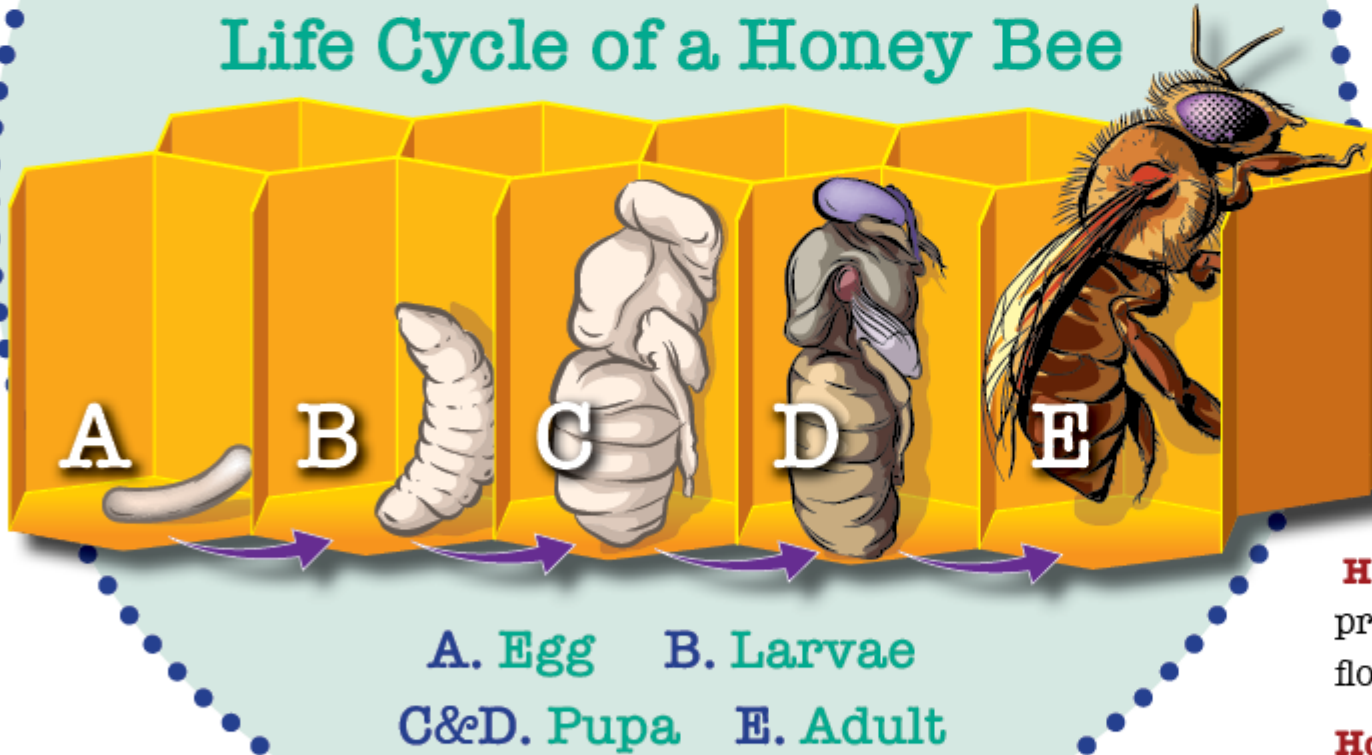


Honeycomb-shaped shelves

STAGES OF GROWTH

Total **metamorphosis**, or growth time, varies between the three different types of bees, but the process stays the same: 24 days for drones, 21 days for worker bees and 16 days for queens.

Life Cycle of a Honey Bee



VOCABULARY

GROW YOUR KNOWLEDGE!

Allergens - a substance that causes an allergic reaction

Colony - a group of bees

Beeswax - a substance released from glands located on the abdomen of the worker bee

Foraging - gathering materials outside the hive; performed by worker bees

Hexagon - a six-sided shape

Hive - structure where the colony lives

Honey - a sweet, sticky liquid bees produce from nectar collected from flowering plants

Honey sac - pouch in which the worker bee stores the nectar it has collected

Metamorphosis - the process where an organism changes and grows from an immature stage to adult stage

Nectar - a sweet liquid produced by flowers

Pollen - a powder-like substance produced by flowering plants

Pollinator - an animal that moves pollen from the male part (anther) of the flower to the female part (stigma), thus causing plants to produce fruit or seed

DID YOU KNOW?

Honeybees must gather nectar from 2 million flowers to make 1 pound of honey.



DID YOU KNOW?

Bees pollinate 95 different crops, helping to create nearly one-third of the world's food supply.



How honeybees make honey:



Worker bees are in charge of collecting the **nectar** from flowering plants, returning to the hive and turning the nectar into honey. With its ultraviolet vision, a bee sees dark shapes on a flower that tells it which flowers are rich in nectar. The bee gulps the nectar and stores it in its **honey sac**. While in the **honey sac**, the sugary nectar is being simplified so it can change into honey. Once at the hive, the nectar is stored in the honeycomb. The bees fan the nectar with their wings to evaporate moisture.

Nectar contains about 80% water, while honey only has about 19% water. The bees spread the nectar so it can dry and then cover it with a thin layer of wax. After the thickened nectar has dried and aged, it becomes honey.



A common honey variety in Alabama is cotton honey, a light-colored, delicately favored honey.

Local bees make local honey, which means the pollen they collect and bring back to the hive is all found from nearby plants. A popular use of local raw honey is to treat allergies. Local raw honey will have a tiny amount of the local pollen that triggers allergies. Some say a tablespoon of local raw honey a day can help build up your immune system to local **allergens** like pollen.



Cotton Honey



BEEKEEPING

There are more than 600 registered beekeepers and an estimated 7,000 honey-producing colonies in Alabama.

Honeybees face many hazards, including extreme weather and animals who steal their honey. Beekeepers keep the colony warm in the winter and shaded from heat in the summer. Beekeepers also position hives near lots of flowers for pollination in the



Checking honeycomb

spring. After the colony has filled the comb with honey, the beekeepers harvest it. The beekeeper uses a special heated knife to melt the wax and open the honeycomb. The honeycomb is placed in a machine to separate the honey from the comb. Finally, the honey is filtered through a strainer to remove any leftover wax.

Beekeepers have special equipment to protect them being stung by bees, including a suit and veil. It is important to never approach or disturb a beehive without a professional beekeeper's help.



Uses of Beeswax

- Candles • Cooking
- Crayons • Lipstick
- Skin moisturizer
- Shoe polish • Floor polish



Hive Sweet Hive

Bees are known for their incredible navigation skills and can always find their way home – no matter how far away they roam to find pollen. How quickly can you find your way to the hive through this maze?



IDENTIFICATION

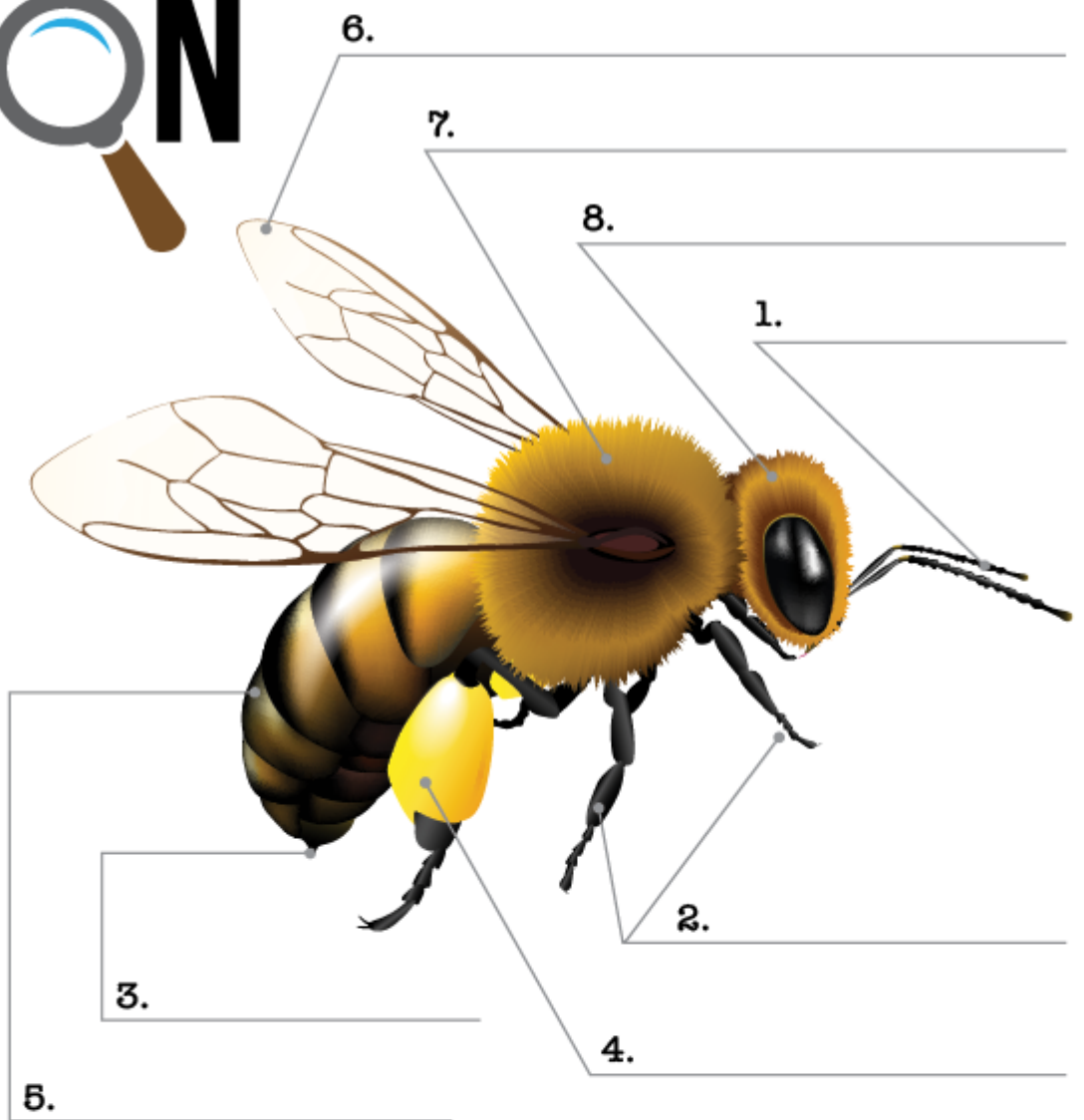
Bee Anatomy:

A honeybee is made up of 3 sections. Each section has an important role to play in the life of a honeybee.

The head features two sets of eyes for different lighting – compound and simple. The head also has antennae, which provide all sensory functions to the bee, including touch, smell, taste and hearing. A honeybee also has a strong jaw and a tiny, functional brain.

The thorax is the midsection of the honeybee and features six legs and two pairs of wings. The wings of the honeybee can beat 250 times a second and allow it to travel through the air at 15 miles per hour.

The abdomen contains the stinger, which is the honeybee's only line of defense. Once honeybees have used their stinger, they typically die. Also located on the abdomen are the wax glands and reproductive organs.



Label parts of the honeybee using these words:
Wing, Antennae, Stinger, Head, Abdomen,
Pollen basket, Legs, Thorax

Answers: 1. Antennae; 2. Legs; 3. Stinger; 4. Pollen basket; 5. Abdomen; 6. Wing; 7. Thorax; 8. Head

SOURCES:

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<http://alfafarmers.org/programs/divisions/commodities/bee-honey/>
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