WHAT'S THE BUZZ HONEY

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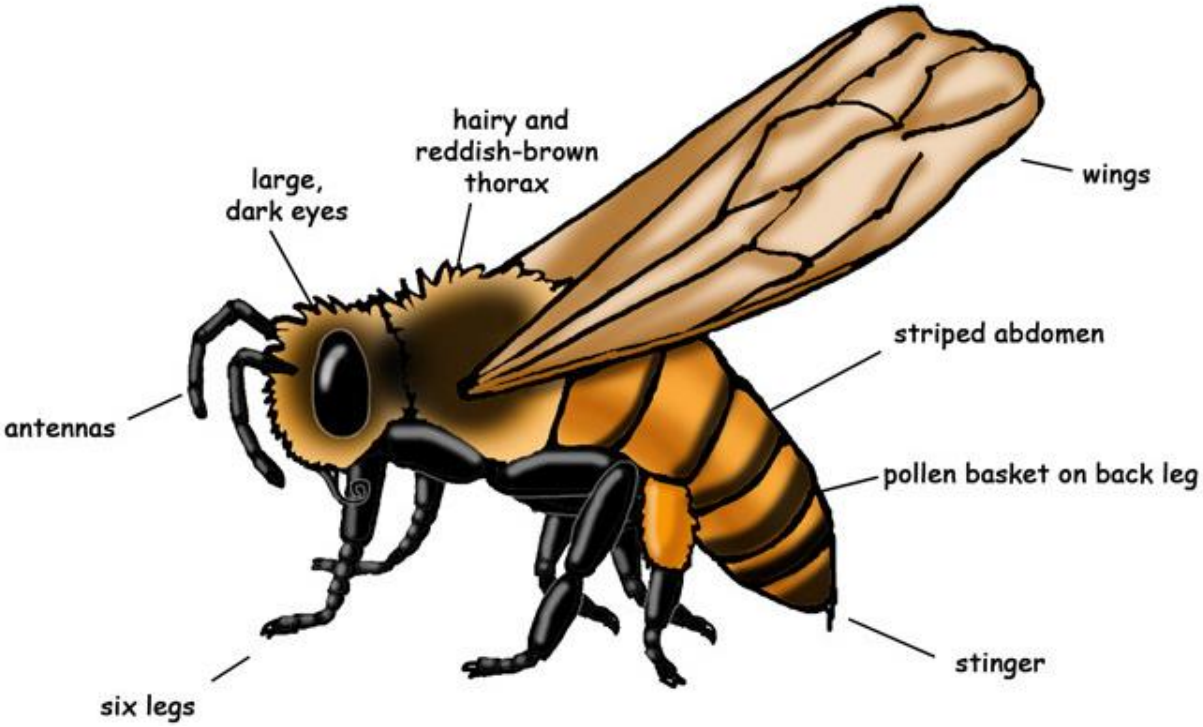
Raw Honey,
Natural Products &
Beekeeping Education

Honeybee Anatomy

EXTERNAL ANATOMY



Honeybees have anatomy that helps them to do the tasks they need to do inside the hive or out in the meadow.

Legs: Like all insects honey bees have six legs which they use to walk across the combs. They are attached at the thorax.

Head, Thorax, & Abdomen: Like all insects their bodies are divided up into the head, thorax and abdomen.

Wings: When bees make any sort of flights they use the two pairs of wings that are attached to their thorax. These wings are powered by muscles inside their thorax called wing muscles.

Antenna: Inside the hive bees use pheromone signals or smells to communicate with each other. They use their antennae to pick up the signals. Different pheromones send different messages they are trying to convey. Some of these include whether to come into the hive; to attack an invader; or even to feed the brood.

Wax Glands: Worker bees also have wax glands on the underside of their abdomens. They use the wax glands to secret wax to form the cells of the honeycomb. Once secreted they chew up the wax and spit it back out and form it into combs to store honey or raise brood.

Stingers: To protect themselves and their colony, bees have stingers and a venom gland which is what makes the sting painful. Lots of people are scared of bees because of the possibility of being stung. BUT bees really don't want to sting you. Why is that? Because if they sting you, they lose their stinger and will die. They will only sting you if they feel extremely threatened.

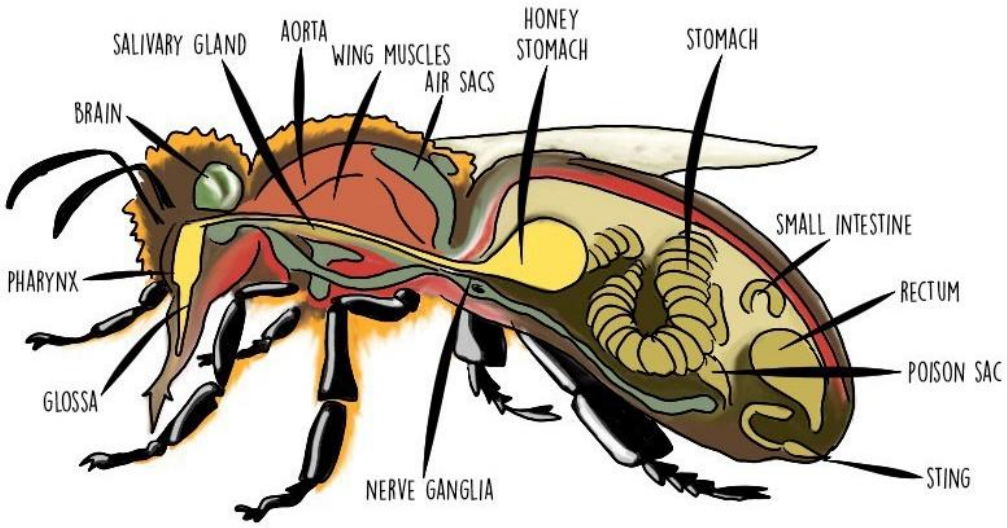
Mandible: The mandible is a kind of jaw that the bees use to chew or grab things with.

Proboscis/Tongue: Bees use their proboscis like a straw to slurp up the nectar from flowers.

Pollen Baskets: On their back legs bees have special pollen baskets so they can carry pollen or propolis back to the hive.

Compound Eyes: When the foragers are going out of the hive looking for flowers to gather pollen and nectar, they use their compound eyes and the simple eyes on the top of their head to both know their orientation and to find the flowers.

INTERNAL ANATOMY



Brain & Nerves: Bees have a very small brain along with a nervous system to control bodily functions.

Poison/Venom Sac: The venom sac is attached to the stinger. This is what produces that painful sting when bees feel threatened.

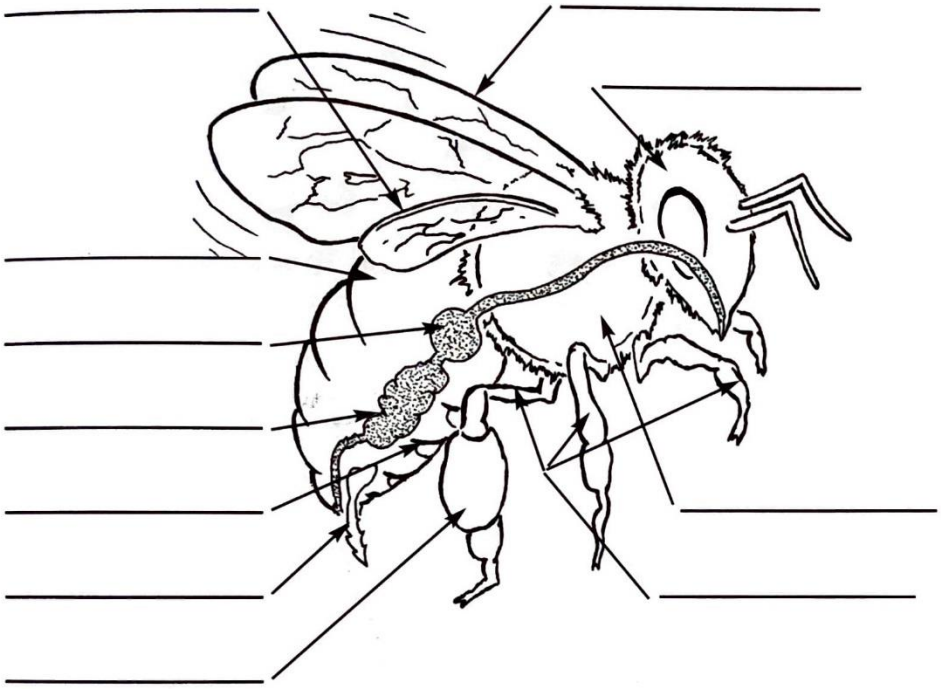
Air Sacs: The bees also have special air sacs, kind of like lungs so they can get oxygen to the rest of their body.

True Stomach: Along with the honey stomach, bees also have a normal stomach to help with digesting food.

Honey Stomach: As bees collect nectar they store it in their honey stomachs. The bee's honey stomach produces a special enzyme called invertase which changes the nectar from a complex sugar into two simple sugars which are Fructose and Glucose.

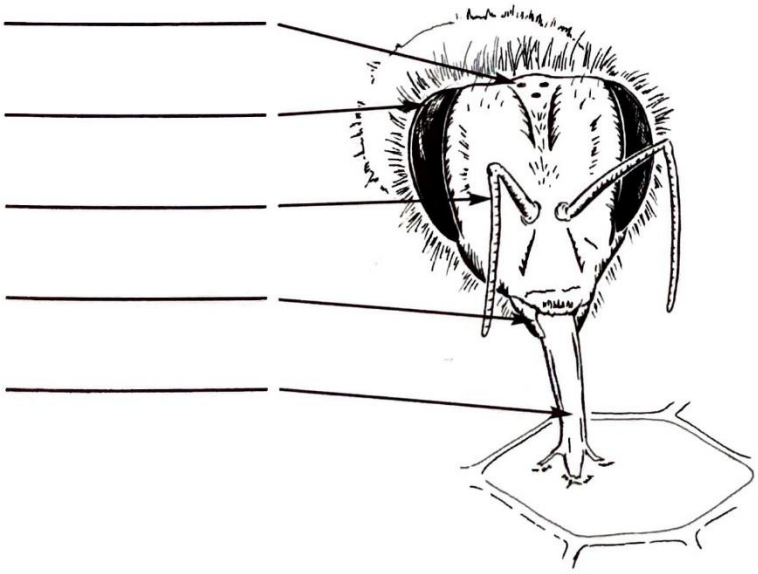
Honey Bees - Biology

Worksheet #1: The Honey Bee Body



Label the following:

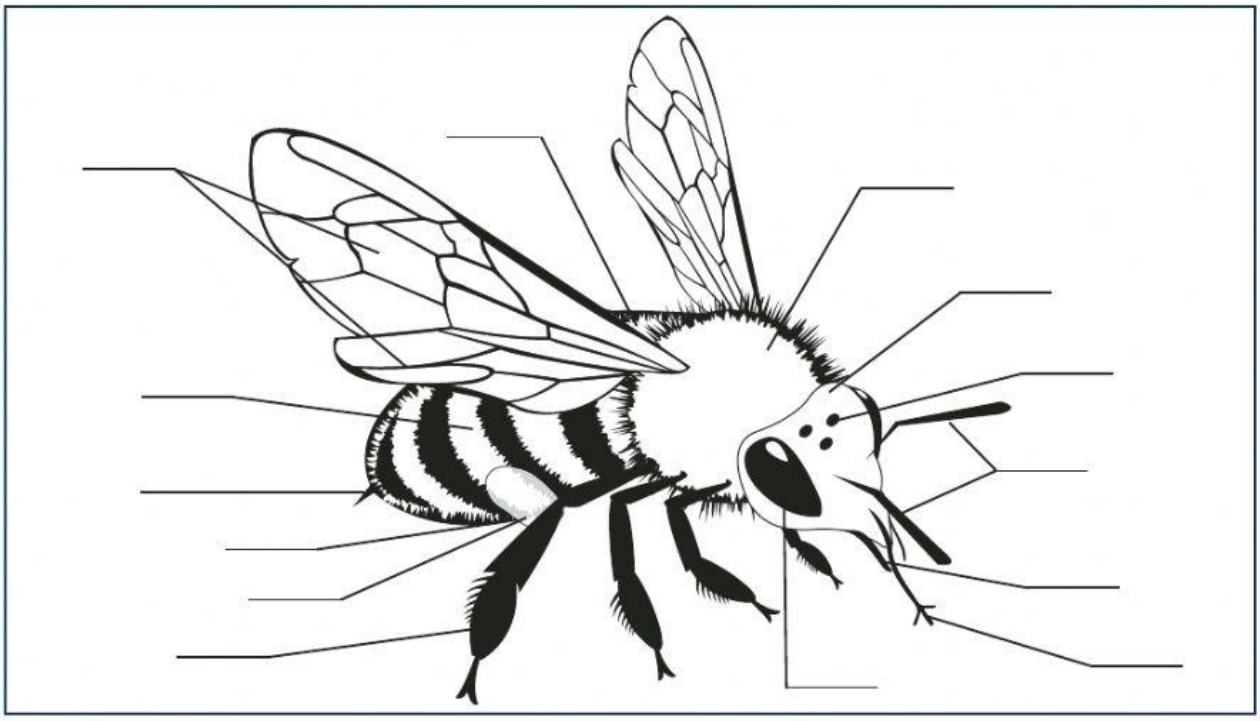
Abdomen
Fore wing
Head
Hind wing
Honey sac
Legs
Midgut or ventriculus
Pollen basket
Stinger
Thorax
Wax gland



Label the following:

Antenna
Compound eye
Mandible
Ocellus
Proboscis or tongue

Anatomy of a Worker Bee



Directions: Match the description with the correct part of the bee by writing the corresponding letter on the appropriate line below. Label the number of each bee body part in its correct location on the bee diagram above.

1. **head** _____
2. **compound eye** _____
3. **simple eyes** _____
4. **antennae** _____
5. **proboscis** _____
6. **mandibles** _____
7. **thorax** _____
8. **wings** _____
9. **legs** _____
10. **pollen basket** _____
11. **abdomen** _____
12. **stinger** _____
13. **honey sac** _____
14. **wax glands** _____

a. a stomach-like organ used to store nectar

b. the middle region of the bee that contains the flight muscles, 4 wings, and 6 legs

c. the front region of the bee that contains 2 compound eyes, 3 simple eyes, 2 antennae, mandibles, and the proboscis

d. a collection of hairs where pollen is stored for transport

e. movable feelers that detect smells and movement

f. the rear region of the bee that contains organs for digestion, reproduction, and respiration as well as the stinger and wax glands

g. glands that form and excrete wax

h. used for walking, dusting antennae, brushing pollen off body hairs, and storing pollen

i. beat 250 times per second allowing the bee to fly

j. made up of tiny lenses that allow the bee to see ultraviolet light and visible light with the exception of red

k. jaw-like structures used to knead wax and to chew honey and pollen

l. have a thick lens that can sense changes in brightness

m. a straw-like tongue used to suck nectar or honey

n. barbed and has an attached venom pouch; used for defense