

# POLLINATORS

## The Honey Bee



4-H Pollinator  
Habitat Program



SCIENCE, TECHNOLOGY,  
ENGINEERING, AND MATH  
COLORADO STATE UNIVERSITY  
EXTENSION

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Agriculture and Colorado counties cooperating. Extension  
programs are available to all without discrimination.

Issue 1

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# TO BEE OR NOT TO BEE... YOU WILL BEE A BEEKEEPER



That's right folks! You are going to work through knowledge about bees and activities that at the end you will become a junior beekeeper. In this magazine you will gain knowledge about beekeeping. Even if you do not own bees you will learn a lot about things like wax, honey, and biology of bees.

Read on and you will find out exactly what to do.

There have been many people throughout the ages who have kept bees. Including Sherlock Holmes, Thomas Jefferson, Leo Tolstoy, actor Henry Fonda, and even Benjamin Franklin.

## LET'S START

The first thing we need as a beekeeper is to have a Honey Bee Name. Be creative and write it on your name tag that is included in the box. Here are some example names: Buzzing Brandon, The Bee Whisperer, Stinging Steve,

### Did you know?

The art of beekeeping has been around for 1000's of years. Even the ancient Egyptians had jars of honey. And because honey never gets rotten or bacteria never grows on it, honey is still good even after a very long time. In fact they found jars of honey from the Egyptians that were still good to eat! Yum.

## TOP REASONS TO BE A BEEKEEPER

- Beekeeping means being close to nature
- Studying bees is studying science.
- Taking care of bees teaches you responsibility.



"A SPOONFUL OF HONEY WILL CATCH MORE FLIES  
THAN A GALLON OF VINEGAR."

~BENJAMIN FRANKLIN



# HONEY BEES ARE IMPORTANT FOR OUR FOOD

## *Thanks to bees we have food!*

Next time you go to the grocery store like Safeway or Albertsons look around. So much food! All this came because of pollination. Pollen was transferred from one flower to another to help the plant grow seeds for reproduction.

In fact, honey bees are responsible for 1/3 of the food that we eat. Imagine that! If you divided your food into 3 equal parts, one of those is thanks to the bees.

## **BEEKEEPERS ARE IMPORTANT FOR GROWING FOOD**

Now as a Beekeeper your role is very important. Beekeepers transport bees for pollination to many different places in the US. They go to California in February for the almond trees, then to Washington in April for the apple orchards, and to Maine in May for the blueberries and so on.





#### 4-H STEM POLLINATORS: THE HONEY BEE



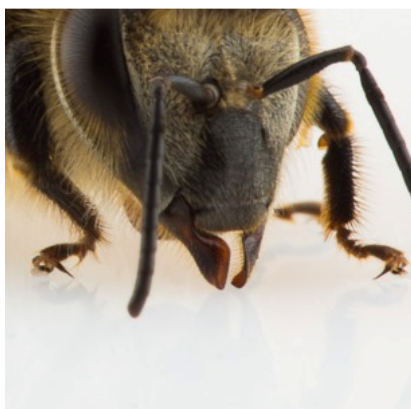
### Bees are very hairy

Being hairy helps capture pollen which sticks to their hair. Bees hairs are also branched like the barbules of a feather which really help capture the pollen.



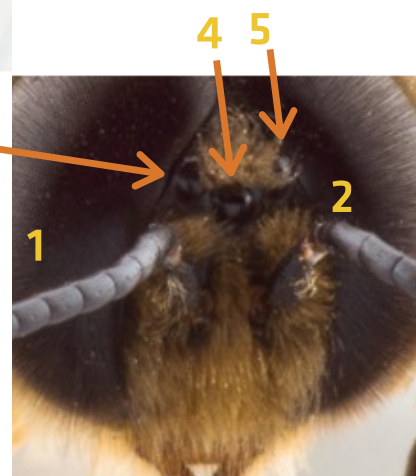
### Hair on the eyes

Hair is found growing on their eyeballs. These tiny hairs help them know wind direction and how fast they are flying. Super cool!



### Bees have 5 eyes<sup>3</sup>

They have 2 main compound eyes located on the sides of their head made up of thousands of smaller tubes called ommatidia and 3 smaller eyes called ocelli located on their foreheads.



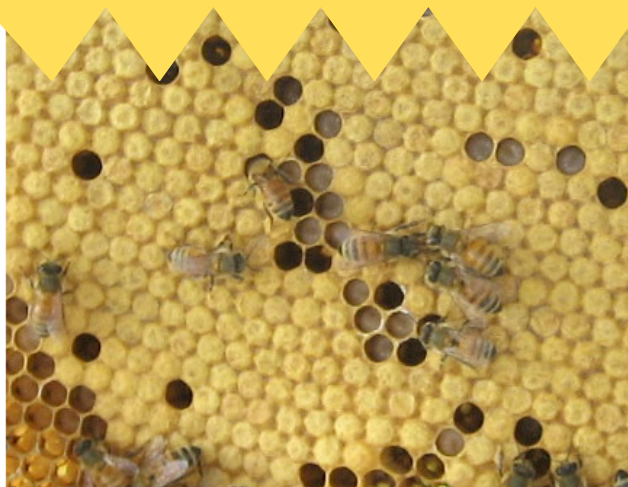
### Proboscis

The Proboscis is the tongue of the bee, used like a straw to suck up fluids such as nectar, honey, or water.



You will be creating a honey bee using the materials found around your house such as a toilet paper roll, some paper, pipe cleaners and some glue. Follow the instructions on this page.

Did you know that there can be over 60,000 bees in one hive? That's a lot of Bees! It takes 12 Honey bees their whole lives just to make 1 teaspoon of honey.



Honey bees are social insects. They are "eusocial," meaning they live in groups and divide labor among members that specialize in certain tasks like caring for their young, building comb, defense, and foraging for food. Ants and wasps are also eusocial.



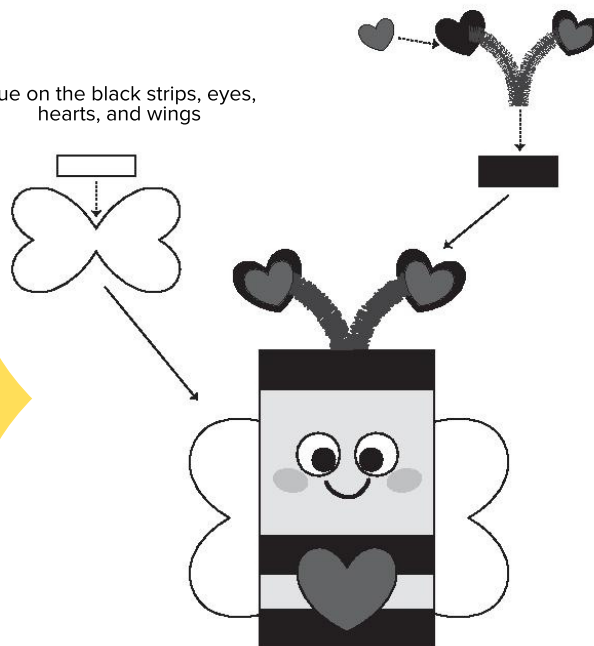
## Instructions

Using the picture as a guide, adhere the pieces together as shown.



Fold the chenille stem in half and sandwich the black hearts on the ends.

Glue on the black strips, eyes, hearts, and wings





Honey is one of the foods that the honey bee produces. They store honey in combs for later use. Honey has different flavors depending on the types of flowers that they visit. Humans can also add flavors to the honey as well. In your box take the honey sticks for a Honey Taste Test.

Now as a beekeeper your job is to taste the honey for flavor and quality. For Round 1 you will choose between the first two flavors then choose between the next two and write your favorite in the yellow for Round 2. Then decide your favorite flavor and post in the pink block.

# HONEY TASTE TEST

ROUND 1

ROUND 2

FINAL

*Orange*

*VS.*

*Buckwheat*

*Wildflower*

*VS.*

*Clover Blossom*

[Yellow box for Round 2 choice]

[Pink box for Final choice]

[Yellow box for Round 2 choice]





## Honey Comb

Honey comb that holds honey and larva is made out of hexagon shaped cells. The hexagon is the perfect shape that is strong and connects together so that little wax is wasted.



## Wax Glands

Special wax glands are found on the abdomen of the honey bee.

These glands secrete wax that help them build and repair the comb. This all happens when the bee is in the "House bee" stage.

## Bees Cap Cells

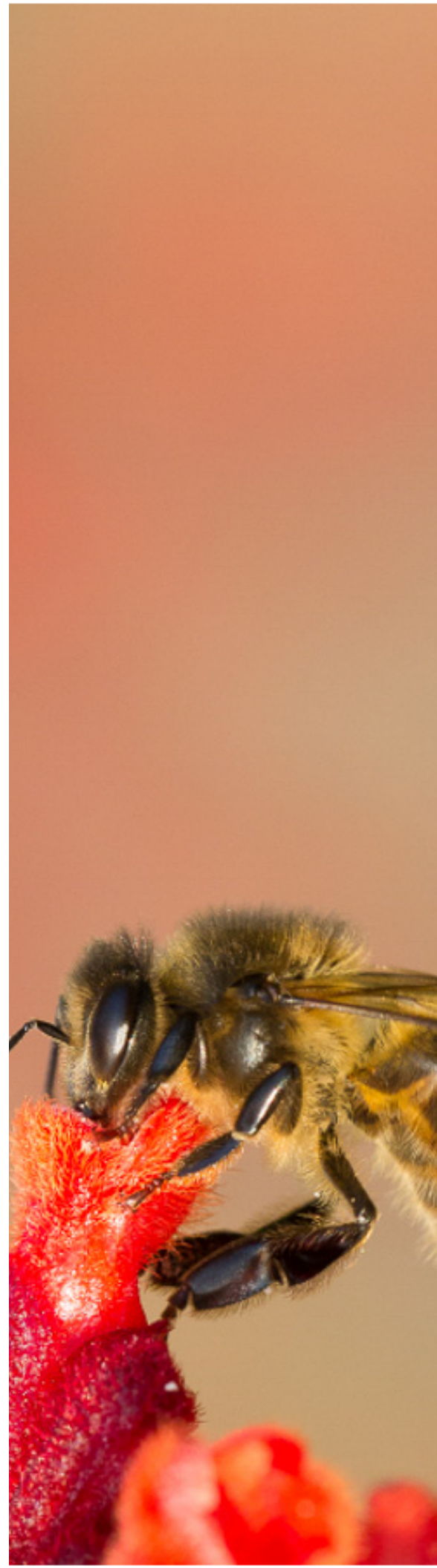
Honey bees also use wax to seal the cells filled with larva or honey. When they are covered they are called capped. Capped honey tells the beekeeper that the honey is ready.



## Honey from the Comb

Often beekeepers will sell honey with the wax comb.

People will chew on the comb and swallow the honey. Yum!







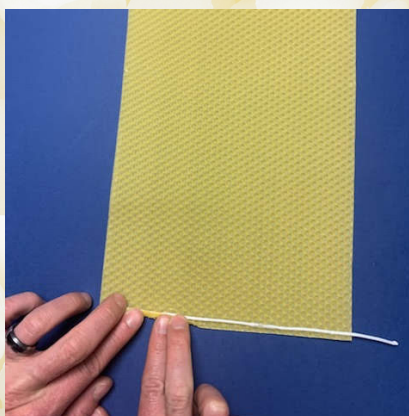
## Rolled Candles!

Now that you have learned about how honey bees make wax, now you get to make your own rolled wax candle! In your 4-H STEM box you will find a wax sheet and a wick. Follow these simple steps:



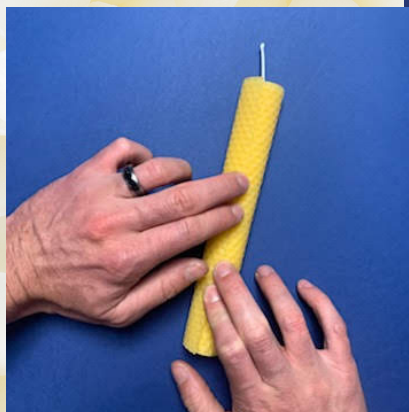
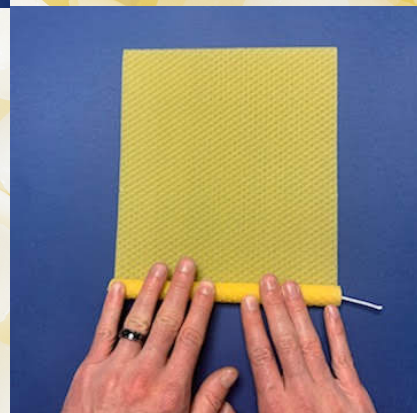
### Step 1:

place the wick along the short edge of the wax sheet. Allow the wick to stick out a few inches. This will be the top of the candle. Then fold the wax over the wick tightly.



### Step 2:

Start rolling the candle tightly so that there is no space between each roll.



### Step 3:

Once it is all rolled, press firmly on the edge of the wax so that it sticks to the rest of the candle.

#### Sources:

The Honey Files A Teaching guide National Honey Board 1  
1409 Business Park Circle, Suite 210 Firestone, CO 80504 [www.honey.com](http://www.honey.com)  
Penn State Extension Beekeeping 101