
Environmental Scientist

Overview:

This lesson and activity are designed to give students hands-on experience understanding honeybee anatomy and the role bees play in our environment.

Grade: 2

TEKS

Scientific processes

2.2 (B, D, E)

2.4 (A)

Science Concepts

2.6 (B, C, D, E)

2.7 (D)

2.8 (A, B)

2.9 (A, B)

2.10 (B)

Literature

The Honey Makers

The Bee Tree

Vocabulary

Head

Thorax

Abdomen

Pollen

Queen

Worker

Drone

Materials

Discovery Book

Thermometer

Field Guides

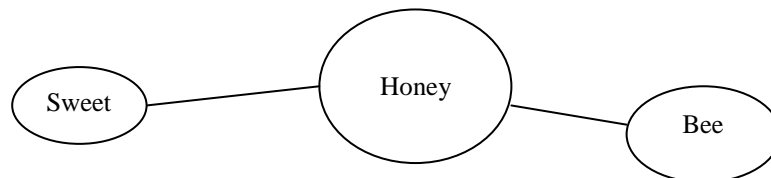
Ziploc Baggies

Stethoscope

Busy Bees

Classroom Activity

1. Write the word "Honey" on the overhead. Ask your students to think about the word and create a web based on the word honey. After several minutes, ask your students to give their ideas one at a time and web their ideas on the overhead projector. Have your students write their names and date on their "honey webs" and collect for evaluation of their prior knowledge about honey.



2. Spend some time discussing their ideas on the class' honey web. Clear up any misconceptions students might have about honey and bees.
3. Make a transparency of "The Honey Bee" at the end of this lesson and copies of the "blank" HoneyBee page for your students. Place the transparency on the overhead and have your students label and color their honeybee.
4. To reinforce the parts of the honeybee play "Where's My Bees." The teacher calls out, "Where are my bees?" The

students reply, "Here we are! Here's my head! Here's my thorax! Here's my abdomen and here are my wings! The students touch their head, chest for the thorax and their stomach for

the abdomen. Have your students buzz and move their arms around for the wings. Students love this activity and it is a great way to get their attention in the field.

5. Explain to your students that a beehive contains 3 types of bees. The queen is the largest of the honeybees and does not have pollen baskets on her legs. The worker bees are the smallest of the honeybees. Worker bees have stiff hairs on their legs to collect pollen. The drone is a male bee and is larger than the worker bees. They have rounded abdomens and large compound eyes.
6. Make a compound eye out of small round mirrors, egg cartons to help your students understand the concept of a compound eye. Have your students bring to class the "paper" egg cartons. Cut out each "egg holder" and hot glue (**Use a low temperature gun.**) them together over a bowl turned upside down. Fill all of the spaces between the egg holders with additional hot glue. Spray paint the inside of the compound eye black. Finally, hot glue small round mirrors inside each "egg holder". To use the compound eye, have a student hold the compound eye next to their face and observe how the mirrors "breakup" the view of their face and the surrounding objects.
7. To better understand a beehive have your students construct a "bee hive" made from toilet paper tubes. *Explain to your students that honeybees make hexagon shaped cells.* This activity requires communication and cooperation between all students.



Discuss with your students how honeybees communicate and cooperate to survive. View "Tales From The Hive" <http://www.pbs.org/wgbh/nova/bees/> with your students. This is a great web page and contains wonderful pictures and easy to understand text.

8. Allow the students create a system for constructing the hive of toilet paper tubes. The idea is for the teacher (Queen Bee) to decide the location of the hive, but to let the students create the hive based on their ideas. To model a real beehive, have the boys become Drones and the girls play the role of the Worker bees. Who holds the tube while another students hot glues the tubes together? How many cells to put in your hive? Where to apply the glue? As the hive continues to grow watch and listen as your students communicate and cooperate with each other. Take notes and discuss your observations with the class as they create their beehive.

9. Honey is made from sweet nectar collected from flowers and brought back to the hive. Bees store the nectar in cells for a future food supply. Bring honeybees to your classroom window (Do this activity in the spring) with the help of artificial flowers and sugar water. Use different colored poster board to cut out the shape of a flower. In the center of your flower place a small cap filled with sugar water. Tape the flower to the window ledge or on a table next to your class' window. Soon you will have honeybees drinking the sugar water. Do the bees prefer a certain color? Do the bees like the water with a lot or a little sugar?

10. Close the lesson by reading *The Bee Tree* by Patricia Polacco. This is a wonderful story about honeybees. Plus the story deals with the concepts of pollination, habitat of bees, honeycomb, culture, geography and the reward of hard work. After reading the story, bring into class some baking power biscuits, fresh brewed tea and honey. Enjoy!

In the Field

Busy Bees

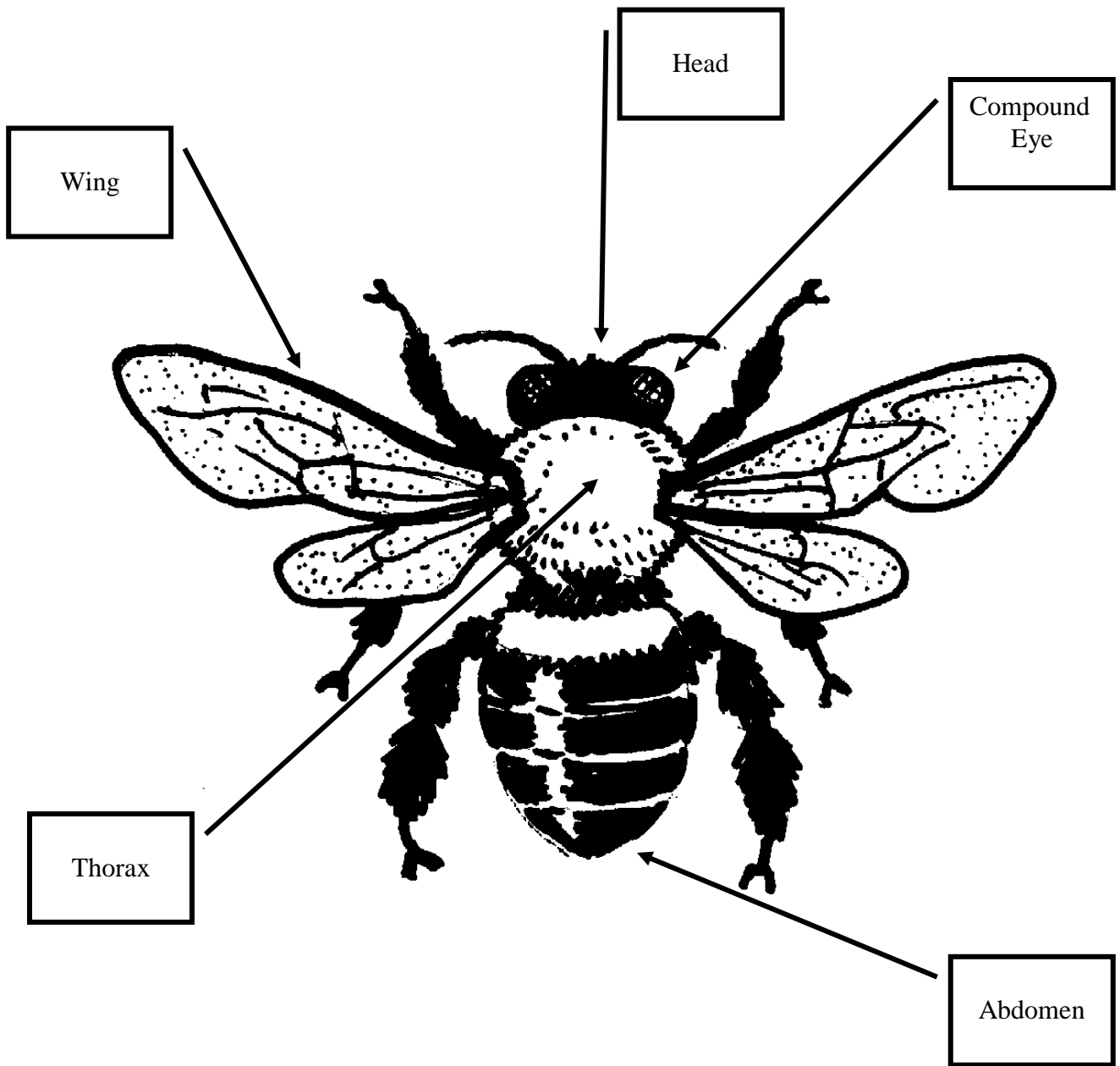
1. Prior to leaving your school make sure you have the following items.
 - Discovery Books
 - Ziploc Baggies (1 gallon size)
 - Pencils (inexpensive mechanical pencils are excellent)
 - Compass
 - Thermometer
 - Water and sugar water for bee experiment
 - First Aid Kit
 - Sack Lunch or light snack
 - Camera
 - Backpack
 - Stethoscope
2. Before getting on the trail, remind students their observations and data collected will be used back in the classroom to create charts and graphs of their observations.
3. Set your behavior expectations before leaving the parking lot. Explain how students are to behave along the trail and in small groups. State specifically what behaviors you want to see along the trail. Remind students the higher their voices are the less likely they will see wildlife along the trail.
4. Distribute Discovery Books to students and record weather data observations. Teachers a gallon size ziploc baggie make an excellent container for pencils and Discovery Books during lunch or at the end of the day.
5. Walk through the gate and follow the trail. Remember to go slow and listen to your student's observations along the trail. *Use the "Where's My Bees" game to get your students attention.*
6. If you have enough adult supervision, divide your class into two groups. Have each group go in opposite directions along the trail. This will help reduce the noise level and also give your students an opportunity to share their observations when the class comes together at the halfway point. This is a good opportunity reinforce the idea that scientists share data too.

Post Eastman Activities

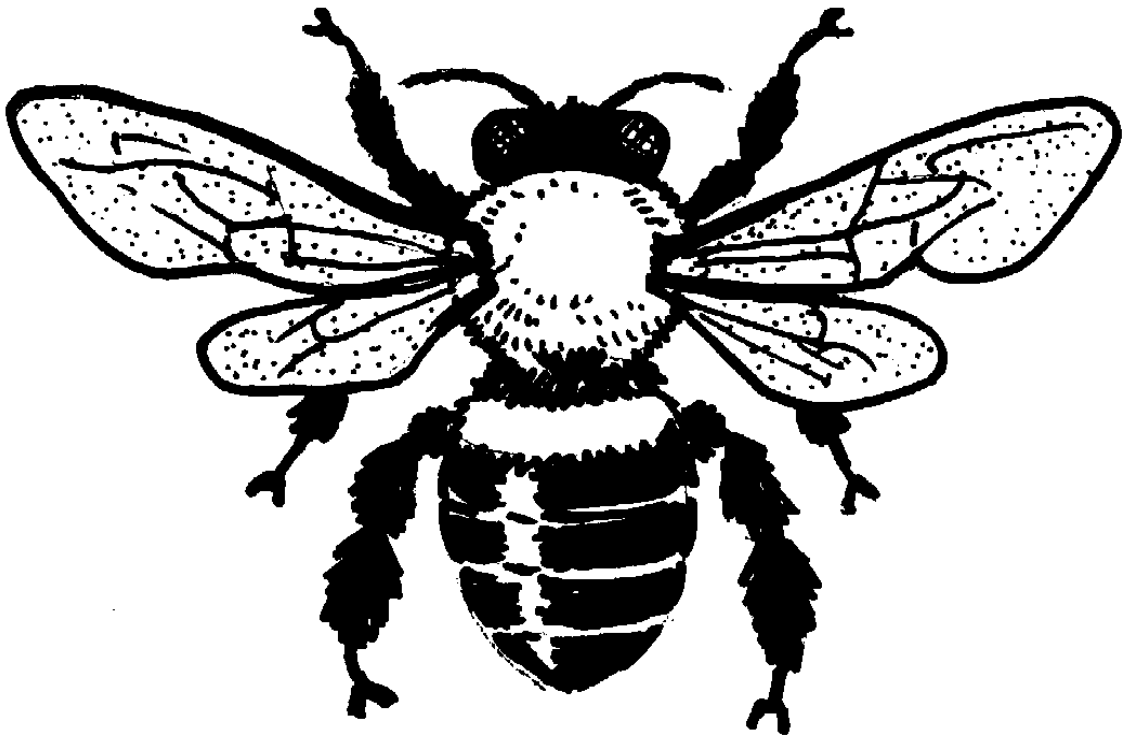
Busy Bees

- Ask your students to discuss their experiences while at the Eastman Nature and Wildlife Habitat Center.
- Write a narrative about their experiences at the Eastman Nature and Wildlife Habitat Center.
- Have your students create charts and graphs of the data they collected while at the Eastman Nature and Wildlife Habitat Center.
- Invite a Beekeeper to visit your classroom and discuss the importance of bees.
- Students create an "Environmental Report" based on their Discovery Book observations.
- Write a Haiku about honeybees.
- Create bar graphs at home or in the Computer Lab. Use the data collected in the field to compare and contrast your school's environmental observations with that of the Eastman Nature and Wildlife Habitat Center.
- Student produced books about their honeybees.
- Maintain an Environmental Journal for 1 school year.
- Write the word "Honey" on the overhead and ask your students to create another web. Evaluate your students learning by comparing their first web with the second honey web.
- Have your students bring to class recipes that use honey and select one to make and eat!

The Honey Bee



The Honey Bee



Resources

Publications

The Honey Makers by Gail Gibbons

The Bee Tree by Patricia Polacco

Sunship Earth by Steve Van Matre

Field Guide for the Eastman Nature Trail by Eric L. Taylor, Ph.D.

The Honeybee and the Robber: A Moving Picture Book by Eric Carle

The Magic School Bus: Inside a Beehive by Joanna Cole

Web Pages

East Texas Beekeeper's Association

<http://www.etba.info/>

John's Bee Keeping Notebook

<http://outdoorplace.org/beekeeping/>

Honeybee Lesson Plans

<http://ag.arizona.edu/pubs/insects/ahb/>

Sue Bee

<http://www.suebee.com>

The Honey Expert

<http://www.honey.com/nhb/downloads/educational/>

Tales from the Hive

<http://www.pbs.org/wgbh/nova/bees/>