

# HC 4-H NATURAL RESOURCES CLUB



**More Than  
You  
Imagined!**

**APRIL 2020**



*Like us at Henry County KY 4-H*



*Follow us at henrycountyky4h*

*Visit us at [www.henrycounty4h.com](http://www.henrycounty4h.com)*



## Important Pollinators



Insect-pollinated crops in North America are worth over \$24 billion annually in food, medicines, dyes, and fibers. Of the insect pollinators, bees are the most important. They evolved with flowers and are the only animal adapted to feed on pollen and nectar only.



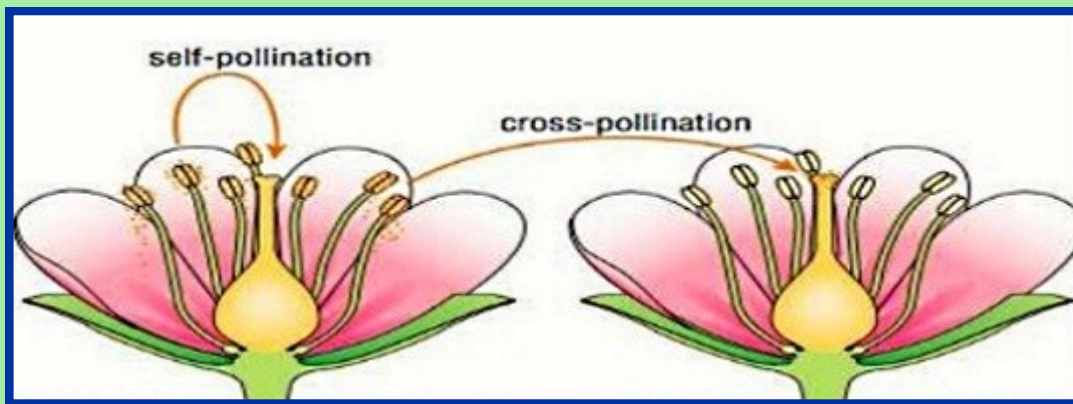
There are over 20,000 species of bees worldwide with almost 4,000 in the U.S. While many only think about the honey bee, there are **MANY** native bees that help pollinate our plants and flowers.



# POLLINATION BASICS

## What is Pollination?

- The act of transferring pollen grains from the male anther of a flower to the female stigma
- Self-pollination: plants that can pollinate themselves
- Cross-pollination: plants that require pollen from a different plant of the same species



Methods of pollination: Wind, water, animals

## What is a Pollinator? 🍀

- Animal that moves pollen from one part of the flower of a plant to another flower
- Typically have sticky hairs or structures to help grab the pollen
- Global pollinators: bees, butterflies, moths, wasps, bats, flies, beetles, ants, hummingbirds
- Most important pollinators in Kentucky: bees



# Why are Bees so Important?

- **Only group of animals that are adapted to feed solely on nectar and pollen**
  - **Life cycle depends on visiting multiple flowers to collect pollen and nectar for themselves and their larvae**
  - **Bees and flowering plants appeared on the Earth at the same period, Cretaceous Period: evolved together.**
  - **Honey bees contribute about \$15 billion to the US economy**
  - **Native bees contribute about \$9 billion to US economy**
- \$\$**

## THOUSANDS OF KINDS OF BEES

**Hive-Dwelling Bees:** bumble bees, honey bees

- Organization: Queen, worker, and drone bees
- Social: each have a function in the hive



**Solitary Bees:** Majority of bees.

Ex. Mason bee, leafcutter bee, digger bee

- Live and work alone
- Smaller than honey bee and do not make honey



ALL kinds of bees are critical for pollination, not just honey bees.

80-90% of world animal pollination occurs by BEES



# HONEY BEES



Honey bees are not native to the New World.

- Many crops grown in the U.S. aren't New World natives either.
- Both the crops and the bees evolved together in other countries and were brought here by European settlers.
- Suggested that the first honey bee colonies arrived in the Colony of Virginia from England early in 1622.

Honey bees live in hives and have a social system:

- ⇒ Queen: lays eggs, regulates the colony's social order through release of chemicals
- ⇒ Worker: females; functions: feed the queen, larvae, and drones; guards the hive; forages for materials and food; builds the hive; cares for the eggs and larvae; cleans the hive; keeps the hive cool by fanning their wings
- ⇒ Drones: males; mates with the queen

Some crops pollinated by honey bees: apples, melons, cranberries, squash, pumpkins, broccoli, and almonds

People cannot easily control other pollinators but can manage honey bee hives. The hives can be transported WHERE and WHEN they are needed for pollination.

## Beekeeping

- Sell queen bees and nucleus colonies
- Produce honey and beeswax
- Beeswax is used in candles, cosmetics, artists' materials, electronics, lubricants, polishes, inks, and paints
- Beekeepers rent their hives and bees to farms in order to pollinate their crops.
  - Almonds are almost completely dependent on honey bees for pollination. In California, the almond industry uses 75% of all managed honey bee colonies in the U.S., brought from all over the country during January and February



H O N E Y

B E E

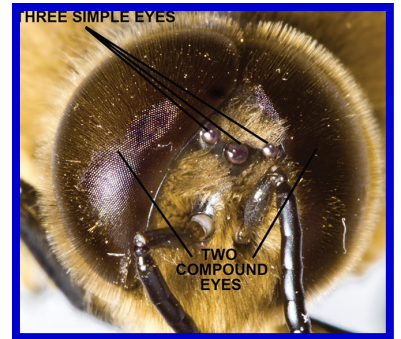
F A C T S



Honey bees have 4 wings that beat 11,440 times per minute.



A colony of honey bees will fly 55,000 miles and visit 2 million plants to make one pound of honey.

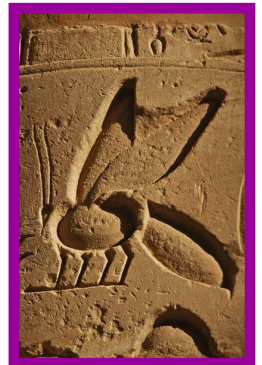


Bees possess five eyes: 3 simple eyes in a triangle on top of its head and 1 large compound eye on each side of its head.

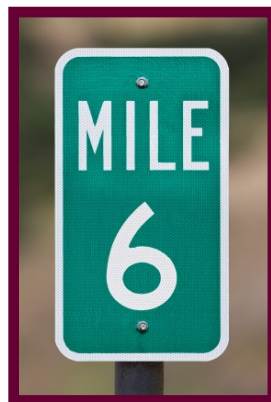
Honey bees use dances in the hive to communicate the location of nectar and water to other bees. One dance is called the waggle dance.



Honey was used in ancient times by the Egyptians, Greeks and Romans to pay taxes, as food sweeteners, in religious ceremonies, and to treat many medical conditions, including wounds.



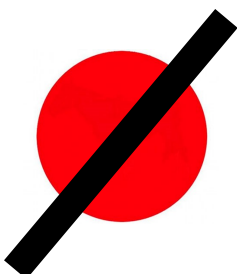
Honey Bee Colony: 50,000 worker bees, 1 queen and 200-300 drones. During the winter, the hive population decreases about 50%.



Honey bees can fly up to 6 miles from their hive, but average 2-3 miles.



The honey bee is the only insect that produces food eaten by man



Bees cannot recognize the color red.

The queen honey bee lays 1,000-3,000 eggs per day.



In the course of her lifetime, a worker bee will produce 1/12th of a teaspoon of honey.



# NATIVE BEES: IMPORTANT POLLINATORS TOO!

- \* **Generalists:** loves to visit a variety of flowers, not one specific species
- \* Some native bees **active when it is too cold or wet** for honey bees
- \* More efficient in pollinating many specific plants, especially native crops such as pumpkins, squash, blueberries, cranberries
- \* Many can **buzz-pollinate:** vibrate their wing muscles to the frequency needed to release pollen from certain flowers
- \* Do NOT have pollen baskets: **messier but more efficient at pollination.**
  - \* Pollen on the abdomen falls off easier than tucked in a pollen basket
- \* **Erratic flight patterns:** visit several plants rather than staying on one plant
- \* **Unlikely to sting** since not defending young or honey or pollen stores
- \* Most native bees are **SOLITARY:** Nest in ground or tubular tunnels.
  - \* Only function is to reproduce and place eggs and pollen for the larvae in the nest holes. No energy wasted on maintaining a social colony

## Mason Bee Paper Tube Nest

### March-June:

Place nest horizontal near native plants and moist clay soil at about eye-level

- Face the opening of nest towards the East
- Do not place it near a birdhouse or area where pesticides applied



July-August: place your nest in a protected shed or garage

October-November: harvest the cocoons from the paper tubes and store in paper bag/cardboard box in shed or garage

March: place cocoons outside in protected place

- Place new paper tubes in the can for another year and repeat



# Pollinators are in Trouble

## Why Should the Public Care About What Happens to Pollinators?

- About one in every 4 mouthfuls in our diet directly or indirectly benefited from insect pollination.



- Over 100 crop species in North America require insect pollination



## Declining in number

- |                      |   |
|----------------------|---|
| • Pollution          | • Habitat Loss                            |
| • Pesticides         | • Habitat Fragmentation                   |
| • Diseases and pests | (Plant diversity decreases when habitat   |
| • Invasive species   | broken up into sections and/or urbanized) |

## What To Do To Help

- Educate public
- Use pesticides wisely (proper amount, proper time of day)
- Conserve and create pollinator habitat



- Grow pollinator-friendly plants
  - NATIVE is best, such as clover, bee balm, joe-pye weed
  - Honey bees prefer 3,5, or 7 petal flowers; white, yellow, and lavender in color





# What do bees use for bird watching?

To answer the riddle, find all the words. Then, reading from left to right starting at the top row, fill in the blanks with the letters not used.

BUMBLEBEE	NECTAR
CROPS	PESTICIDE
DRONE	POLLEN
FARM	POLLINATION
FLOWER	POLLINATOR
HABITAT LOSS	POLLUTION
HIVE	QUEEN
HONEY	SOLITARY
MASON BEE	WORKER

C	W	F	H	O	N	E	Y	P	B	E	M
R	O	T	A	N	I	L	L	O	P	E	A
O	R	E	B	R	E	N	Q	L	P	B	S
P	K	A	I	O	M	C	U	L	O	E	O
S	E	U	T	L	A	N	E	I	L	L	N
F	R	S	A	C	E	R	E	N	L	B	B
L	D	S	T	L	E	Z	N	A	U	M	E
O	N	R	L	I	U	N	L	T	T	U	E
W	C	O	O	T	C	Q	E	I	I	B	V
E	P	H	S	N	I	I	W	O	O	D	I
R	P	W	S	X	E	M	D	N	N	U	H
S	O	L	I	T	A	R	Y	E	D	Z	O

ANSWER: \_\_\_\_\_



**What kind of bees hum and drop things?**  
A fumble bee!

**What animals are smarter than talking parrots?**  
Spelling bees

**What does a bee get at McDonalds?**  
A hamburger!