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HONEY BEE LIFE HISTORY AND BIOLOGY
What makes an insect?

- 3 body segments
  - Head
  - Thorax
  - Abdomen
- 3 pairs of jointed legs
- 2 antennae
- Exoskeleton
Johnston Organ:
A collection of sensory cells that detects movement of the antennae, and helps orientation during flight
The fore and hind wings are held together with little hooks called hamuli.
Corbicula: A smooth area on the hind tibia of each leg fringed with long hairs and serving to transport pollen.
Reproductive System

A receptacle in the reproductive tracts of certain female invertebrates, especially insects, in which spermatozoa are received and stored until needed to fertilize the egg.
Honey Stomach = Crop

Digestive System
Circulatory System
Respiratory System

- Spiracles
- Air Sac
- Trachea
The Hive...

- Social Insects
- 10,000 – 60,000 bees per hive
- ONE queen
- Workers
  - All Female – perform colony maintenance
- Drones
  - Males – only purpose is to reproduce
The Queen...

- Produced in 2 occasions: Swarming, and Supersedure
- Swarming is splitting of the hive
- Supersedure is when the queen may be failing and the workers elect to rear a new queen
- Queens mate with many males, but only at the beginning of her life
  - Virgin Mating Flight
The Workers...

AS A BEE AGES . . .

- CAP BROOD: 5.6 days
- CLEAN CELLS: 7.6 days
- FEED BROOD: 9.8 days
- RECEIVE NECTAR: 13.1 days
- CLEAN HIVE: 13.3 days
- ORIENT: 14.2 days
- GUARD HIVE: 18.5 days
- FORAGE: 23.4 days
The Drones...

- Large eyes
- Large body size
- Born from unfertilized eggs
- Young drones leave the hive in the morning and form “Drone Assemblies”
- Once a drone mates, he quickly dies
Life History of the Honey Bee

Complete metamorphosis, development times differ

1. Egg
2. Larva
3. Pupa
4. Adult
egg

fertilized?

well-fed?

not

not

queen

worker

male
Larval Cells
What if there is more than 1 Queen??

- Often more than 1 queen is reared
- The first hatched communicates with the others by “toots” and “quacks”
  - Emerged queen toots, queen in cell quacks
  - Queen bee pipping
- Queens can kill other queens in cells
- Queens that meet will fight to the death using stings
- Sometimes queens will leave with a secondary swarm
How do the bees communicate?

- Pheromones!
- Used in the hive and while foraging
- All stages produce pheromones
  - Larval pheromones
  - Worker pheromones
  - Queen “Trailing” pheromone
  - Foraging pheromones
  - Alarm pheromone
  - Hive pheromone
Nasonov Gland = Emits pheromone to draw foragers home
Apis mellifera spp.
Apis florea = Dwarf Honey Bee, Thailand
Apis dorsata = Giant Honey Bee, Asia
Questions?

- www.UFhoneybee.com
- www.AFBEE.com
- http://www.doacs.state.fl.us/pi/plantinsp/apiary/apiary.html