FUN BEE FACTS

- Alexander the Great was embalmed with honey
- It takes 12 bees their entire life to produce a teaspoon of honey.
- Honeybees are the only insect that produces food for humans.
- Although most folks think bears like honey, they really want the bee larva.
- Beeswax is used in the candy coating of M&M's so the "melt in your mouth, not your hand."
- Beekeepers live longer than any other occupation in the world.
- 5 gallons of honey weighs 60 pounds.
- Queen bees are fed Royal Jelly their entire life.
- There are approximately 3200 bees in a pound.
- The average swarm includes 10,000 – 12,000 bees.
- Approximately 1600 bees can cover a deep frame.
- Counting both sides of a deep frame, there are about 6400 cells.

STEVE'S HOUSEKEEPING LIST

- Sign In
- Discounts
- Teaching Hives
- Upcoming Classes
- Raffle Rules

GOAL OF THE COURSE

An INTRODUCTION to the fascinating world of beekeeping.

Mid-York Beekeepers Association

HONEYBEES – *Apis mellifera*

"The more I learn about bees, the more I realize I don't know." – Steve Burton

THE SECRET OF SUCCESSFUL BEEKEEPING!

Maintain the

PHYSIOLOGIC BALANCE

of the Colony

HONEY BEE COLONY

- **SUPER-ORGANISM** - An incredibly organized group of individuals who's duties are so well orchestrated, they act as an individual organism!

COLONY'S NEEDS

1) **SHELTER** – High + Dry + Warm

2) 

FOOD – Nectar + Pollen + Water + Propolis

3) **REPRODUCTION** – Survival of the Species

TEMPERATURE – CONCEPT OF CRITICAL MASS

Temperature	Activity
100°F	Comb builders most efficient
93°F	Brood Nest Temperature
57°F	Clustering Begins
<50°F	Unable to fly
45°F	Immobile
<40°F	Dead

TYPES OF BEES IN THE COLONY

- Queen
- Workers
- Drones

QUEEN – THE CENTER OF ATTENTION

- **TWO FUNCTIONS –**

  1) Egg Production –

  builds population numbers

2) Pheromone Production – directs worker functions

QUEEN FACTS

- Fed a diet of only Royal Jelly during their entire life.
- Reportedly can live from to 5-7 years.
- Usually only 1 Queen per hive, kills other Queens.
- Lays an average of 1500 eggs per day.*(10,000/week)
- She dictates whether an egg is fertilized or not.
- Mates with 15-20 Drones, stores sperm for the rest of her life.
- Fertilized eggs = Females = Queens or Workers,
  Unfertilized eggs = Males = Drones.
- Egg laying slowly dwindles down in the fall, stops altogether in late winter, starts up again after the winter solstice.

WORKERS – WHERE THE ACTION IS

- FUNCTIONS

Days 1-3	"Nurse" Bee – Cleaning cells and incubating eggs
Days 3-6	"Nurse" Bee – Feeding younger larva
Days 6-10	"Nurse" Bee – Feeding older larva and Queen
Days 8-16	"Worker" Bee – Receiving nectar and pollen from Field Bees
Days 12-18	"Worker" Bee – Wax making and cell building
Day 18+	"Guard/Field Bee" – Guarding entrance, nectar and pollen foraging

Adult Life Span - As short as 6 weeks when very busy (wear out), up to about 30 weeks when clustered for the winter.*

NECTAR & POLLEN COLLECTION

- Collection of nectar and/or pollen dictated by colony's needs.
- Bees communicate the location of food sources using the waggle dance.
- Bees suck the nectar through their proboscis into their honey stomach where enzymes begin the conversion of nectar into honey.
- Transferred to house bees, who evaporate it from about 85% moisture, down to 18%.
- Cap the honey when "ripe."
- Pollen collects on the bees hair, which she then brushes into a ball and packs it in her pollen baskets on her back legs.
- Most of the evaporation process is done by house bees fanning their wings.
- Pollen balls are "kicked off" in the hive where house bees mix it with honey, storing it in cells as well preserved "Bee Bread."
- Colonies in CNY should have at least 100 pounds of honey to make it through winter.

DRONES - BUMS

- ONLY PURPOSE – Breed a Queen!

DRONE FACTS

- Produced from an unfertilized egg.
- No stinger.
- Travel freely between hives.
- Do not gather pollen or nectar, but eat it.
- Fly to Drone Congregation Areas to breed Queens about mid-afternoon.
- Immediately die after breeding a Queen.
- Kicked out of the hive in the fall and left to die.

HONEYBEE LIFE CYCLE CHART – DAYS

TYPE	*EGG*	*LARVA*	*PUPA*	*ADULT*
Queen	3.5	4.5	8	16
Worker	3.5	5.5	12	21
Drone	3.5	6.5	14	24

NUTRITION

- **NECTAR/HONEY**– Carbohydrate source for energy (Glucose & Fructose).
- **POLLEN** – Protein/vitamin/mineral source for producing brood and queen pheromones.
- **WATER** – Required for diluting honey for feeding larva.
- **PROPOLIS** – Tree resin source, hive medicine.

When these aren't available, beekeeper provides substitutes in many forms.

REPRODUCTION– A MATTER OF SURVIVAL

- Worker bees keep the brood “nursery” at 93ºF.
- Queen measures cell size to determine if she should fertilize the egg.
- If Queen is failing or colony is preparing to swarm, she’s coerced into laying eggs into Supercedure or Swarm cups (Queen Cells.)
- In an emergency, ANY fertilized, day old larva can produce a Queen if fed copious amounts of Royal Jelly during larval stage. Grafting basis.

REPRODUCTION– A MATTER OF SURVIVAL

- Queen Larva receives 1600 feeding visits from nurse bees versus 143 for worker larva.
- Egg laying positively influenced by;
  - Warm Temperatures
  - Increasing Day Length
  - Open cells in comb
  - Bountiful nutrition*
  - Balanced hive population
  - High Queen Pheromone levels*

REPRODUCTION– MAKING QUEENS BY BEEKEEPER INTERVENTION

- Emergency simulation – Methods that remove the Queen from the colony and the workers frantically feed royal jelly to day-old larva to produce a new queen.
  - Splits
  - Divides

REPRODUCTION– MAKING QUEENS BY BEEKEEPER INTERVENTION

- Swarm Simulation – Crowding colony to induce formation of swarm cells.

- Grafting – Transplanting day old larva into artificial queen cups, incubated in queen-less hives.

SWARMS

- GOOD – if you catch one!
- BAD – if it's your hive that swarms!
- UGLY – The sight of your post-swarmed hive with less than half the bees you started with!

BIOLOGY OF SWARMING

- A colony will only swarm if they feel there are enough provisions left behind to winter successfully!
- Absconding – just leave because they hate the accommodations!
- Triggers - must have both.
  - Crowding.
  - Abundance of incoming forage.

PROCESS OF SWARMING

- Workers run Queen around to skinny her up to fly, while they engorge honey.
- Coerce Queen to lay eggs in multiple Queen/Swarm cells. Typically near bottoms of comb.
- Queen quits laying 3-4 days before swarm.
- Swarm when first swarm cells capped.
- 10-15 thousand bees congregate within a few 100 yards of hive until Scouts find a new home.

SWARM PREVENTION

- Remove Queen and/or Split the hive before it swarms.
- Add open comb/super to avoid crowding.
- Open honey dome – Checker boarding.
- Open brood nest – insert empty frames.
- Can be used as a management tool for colony increase.

CATCHING SWARMS

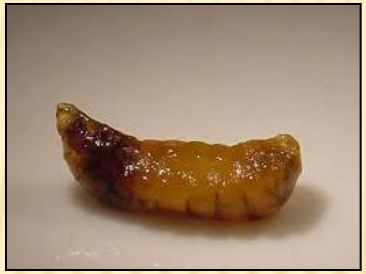
- Easy!!!
- Gentle bees – Not defending their home.
- Trick – If you get the Queen into your box, the rest of the bees march right in. Awesome!!!
- Keeping swarm from absconding;
  - Add frame of brood.
  - Screen entrance for 3 days.
  - Cage queen.

PESTS AND DISEASES

- Parasitic Mites
  - Varroa Mites
  - Tracheal Mites
- Bacterial Diseases
  - American Foulbrood
  - European Foulbrood
- Fungal Disease
  - Chalkbrood

PESTS AND DISEASES

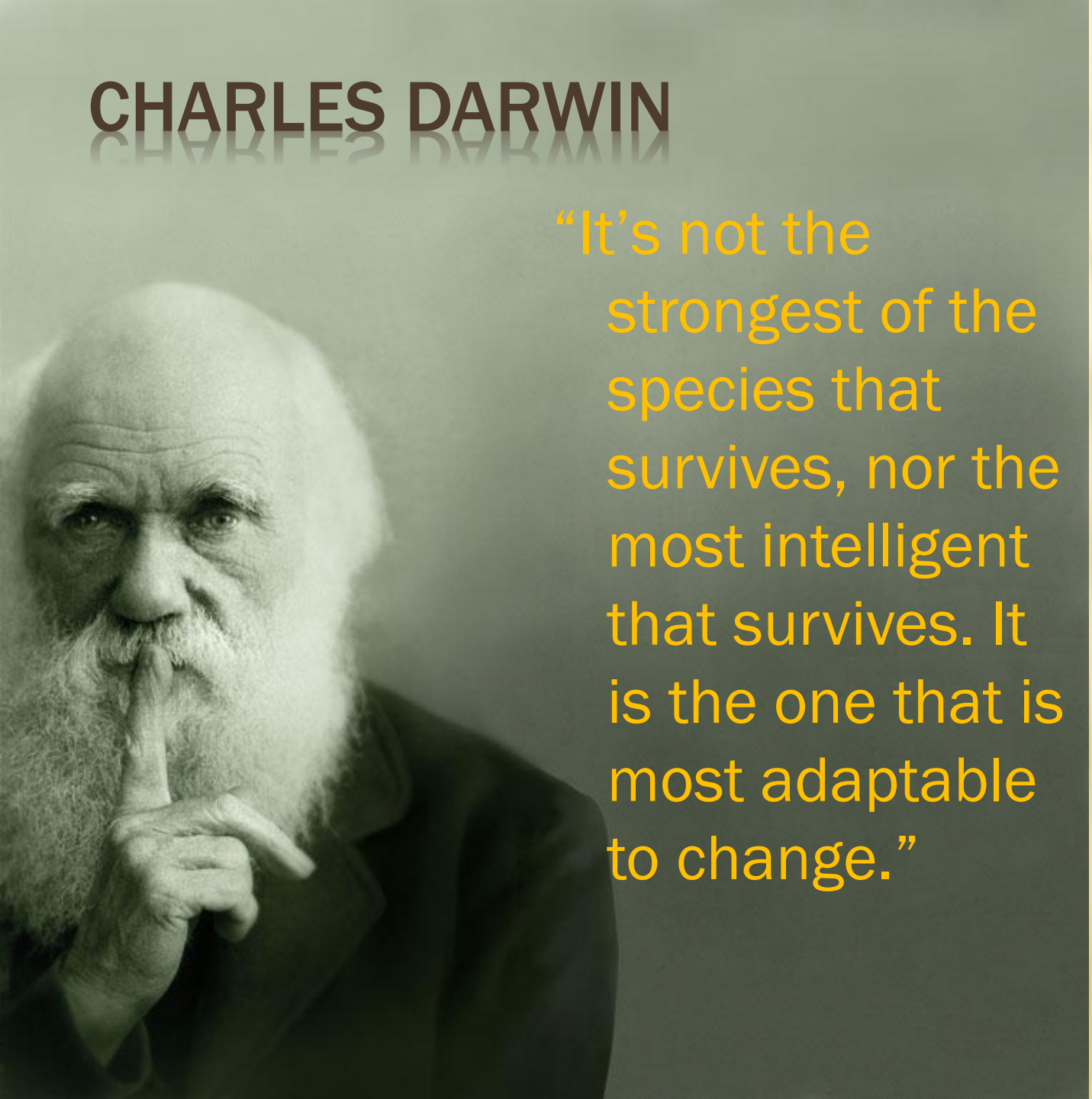
- Protozoan Disease
  - Nosema
- Viral Disease
  - Sacbrood
- Pests
  - Small Hive Beetle
  - Wax Moth
- CCD – Colony Collapse Disorder



PESTS AND DISEASES

- CCD – Colony Collapse Disorder
  - The Mystery
- Biggest Pest – Beekeepers
  - Rolled Queens
  - Chilled Brood
  - Improper Husbandry
  - Insecticides/Pesticides/Medications

CHARLES DARWIN



"It's not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is most adaptable to change."

THE END……

ACTUALLY ONLY THE BEGINNING!