

## Session 6: Excitement and Dread

- Part 1: Pests and Diseases
- Part 2: Installing Packages and Nucs



## Last Time: Fall and Winter

- "Take Care of the Bees Who Take Care of the Bees That Survive the Winter"
- Knowing the Enemy
- Feeding for Winter
- Configuring Hives for Winter
- First Steps: Early August to Early September
- September: Last Chances
- Late September to October: Ventilation!
- January-February: Checking In
- Other tasks



## Overview

- When bad things happen to good bees
- Pests vs. parasites vs. diseases
- Varroa detection and control
- Preparing to set up a hive
- Packages: two ways to install
- How swarms are like packages!
- Nucleus colony how-to
- New hives need food



# Our speakers

Nathalie Steinhauer: BeeInformed Partnership researcher, specialist in entomological epidemiology

David Clark: experienced beekeeper, seller of nucs, member of BUMBA/MSBA, winner of Free State Beekeeper Citizenship Award



## Next Time: Hive Products, Bee Forage



- What bees eat and when
- How urban beekeepers can/should improve bee forage
- What's good for honey bees is good for natives
- Hive products: not just honey
- Wax
- Pollen
- Propolis
- Royal Jelly
- Bees!



## Honey bee Pests & Diseases

Nathalie Steinhauer  
*PhD Candidate*  
UMD Entomology



## Bees are in trouble



## Colony Collapse Disorder

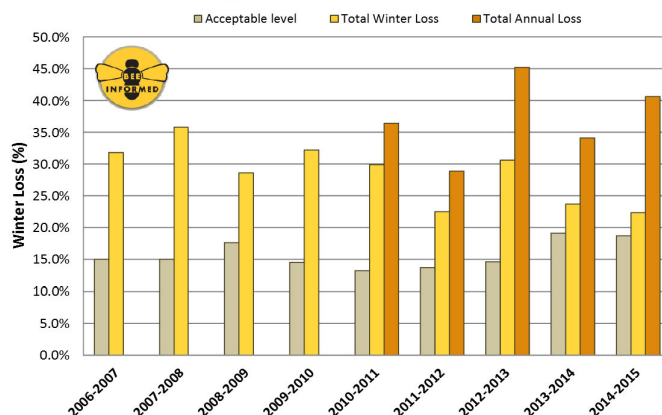


- ✓ Disappearance of most of the “work force”
- ✓ No dead bees in or around the colony
- ✓ Presence of the Queen
- ✓ Presence of capped brood
- ✓ Presence of food stores
- ✓ No robbing or (delayed) attack by pests

**NOT ALL BEE LOSS ARE CCD!**

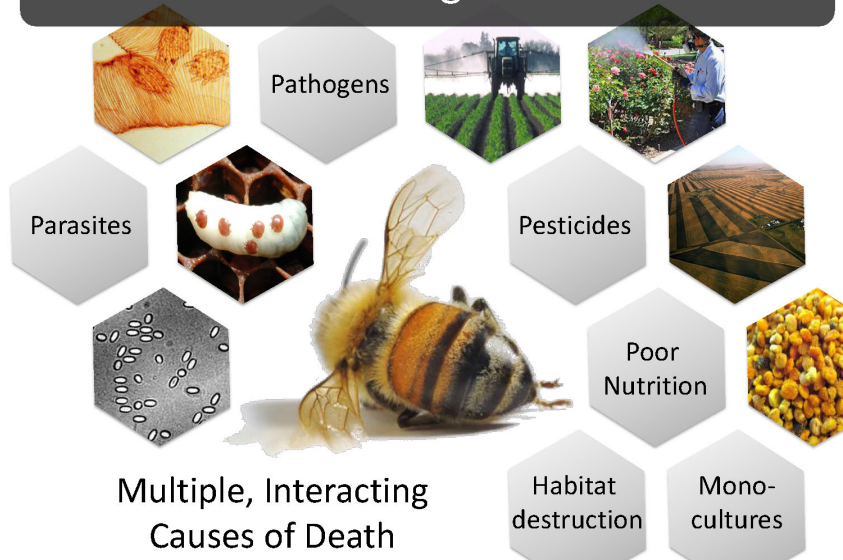
**30% loss**

**Total US managed honey bee colonies Loss Estimates**





# What is killing the bees?



## Part1: Enemies of the Hive

### Pests and Predators

## Part 1: Enemies of the hive

### Birds

- In flight: Swallows, swifts...
- In winter: Picidae (wood peckers)





## Part 1: Enemies of the hive

### Ants and Spiders

- In feeders
- Not real threat, except red ants in the South
- Oil traps



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## Part 1: Enemies of the hive

### Wasps and Hornets

Yellow jacket



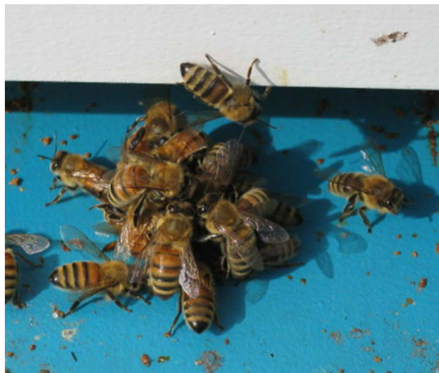
European hornet



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## Part 1: Enemies of the hive

### Wasps and Hornets



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## Part 1: Enemies of the hive

### Rodents

- Reduce entrance in winter



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## Part 1: Enemies of the hive

### Others...



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## Part 1: Enemies of the hive

### Others...



## Part 1: Enemies of the hive

### Wax moth



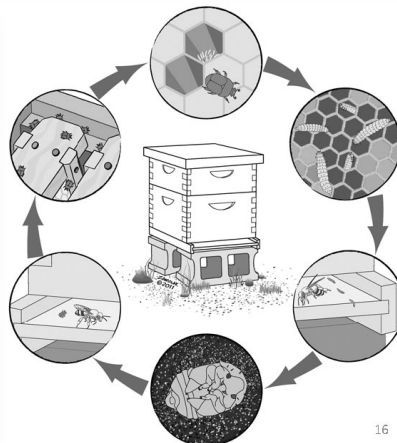
## Part 1: Enemies of the hive

### Wax moth



## Part 1: Enemies of the hive

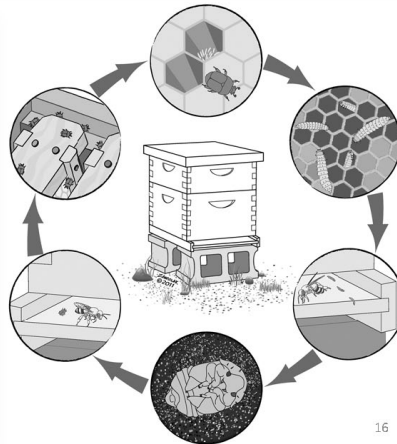
### Small Hive Beetle





## Part 1: Enemies of the hive

### Small Hive Beetle



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## Part 1: Enemies of the hive

### Small Hive Beetle



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## Part 1: Enemies of the hive

### Wax Moth vs Small Hive Beetle larvae

Wax moth

SHB



## Part2: Disease of the Hive

### Pathogens and Parasites

#### Part 2: Diseases of the hive

##### Tracheal mites (Acariose)

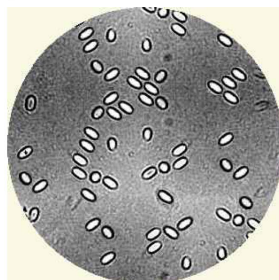
- *Acarapsis woodi*
- In adult bee trachea
- **Symptoms:**
  - bee incapable of flight
  - wings in cross
- **Treatment:**  
Same as varroa



#### Part 2: Diseases of the hive

##### Nosema

- *Nosema apis*  
= “wet” nosema
- *Nosema ceranae*  
= “dry” nosema
- Microsporidian (unicellular parasite)
- in bee’s intestine
- **Symptoms:** dysentery



## Part 2: Diseases of the hive

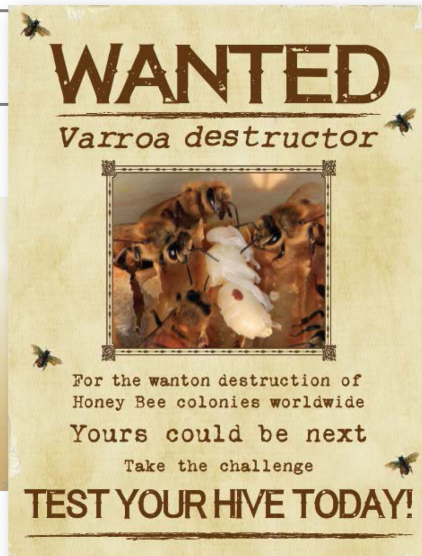
### Chalkbrood and Stonebrood

- *Ascosphaera apis*  
“chalky” larvae
- Fungus
- In open and sealed brood
- *Aspergillus*  
Mummified larvae



## Part 2: Diseases of the hive

### Varroa



## Part 2: Diseases of the hive

### Varroa

- *Varroa destructor*
- In brood and on adults
- Symptoms:
  - Mites
  - Frass
  - Associated virus:  
e.g. deformed wings





## Part 2: Diseases of the hive

### Varroa

#### Monitoring:

- Screened bottom board and sticky board
- Sugar powder
- ...

#### Prevention:

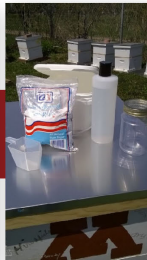
- Drone brood removal
- Chose high hygienic Queen
- Chemical treatments



## Part 2: Diseases of the hive

### Varroa

#### Keep Monitoring!



#### Varroa Mite Testing Kit



[www.beesquad.umn.edu](http://www.beesquad.umn.edu)

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## Part 2: Diseases of the hive

### Varroa



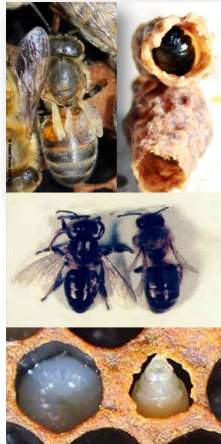
#### Control: Chemical treatments



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### Viruses

- DWV: Deformed Wing Virus
- BQCV: Black Queen Cell Virus
- CBPV: Chronic Bee Paralysis Virus
- SBV: Sacbrood Virus
- ABPV: Acute Bee Paralysis Virus
- IAPV: Israeli Acute Paralysis Virus
- ...



### Three steps to reducing diseases



- Know what a healthy hive looks like
- Practice common sense bee hygiene
- Keep colonies healthy

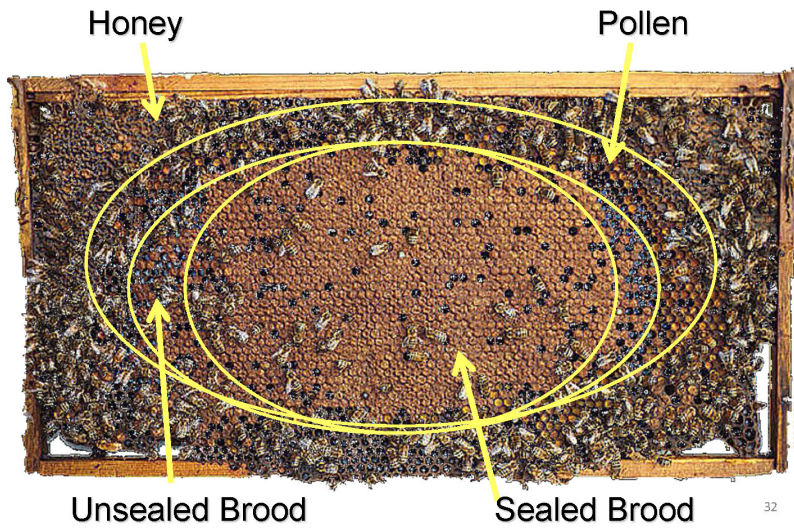
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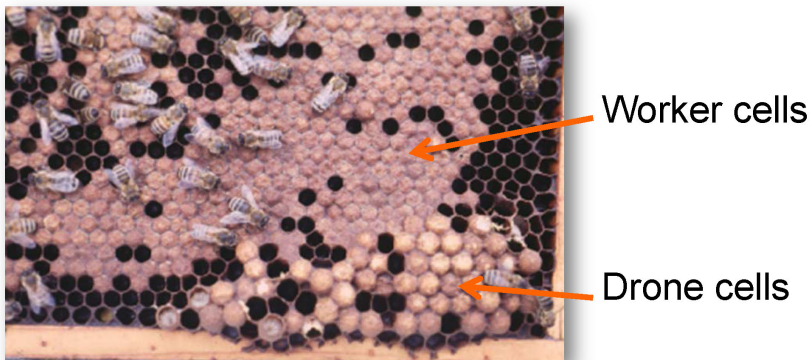
Recognize a healthy...

## Frame of brood



Recognize a healthy...

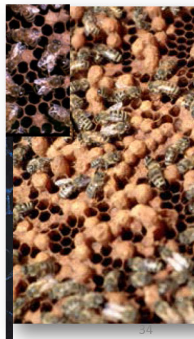
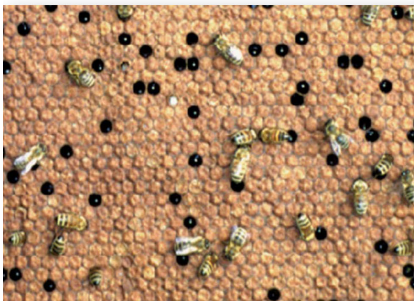
## Type of brood



Recognize a healthy...



## Brood pattern





Recognize a healthy...

## Queen cells



Supercedure cell

Queen cup



Recognize a healthy...



## Queen cells



Swarm Cells



Emergency replacement

Recognize a healthy...



## Eggs



Recognize a healthy...



## Adult Bees



Recognize a healthy...



## Adult Bees



Recognize a healthy...



## Hive Entrance





Recognize a healthy...



## Hive Entrance



Recognize a healthy...

## Hive Entrance



Recognize a healthy...



## Hive Population





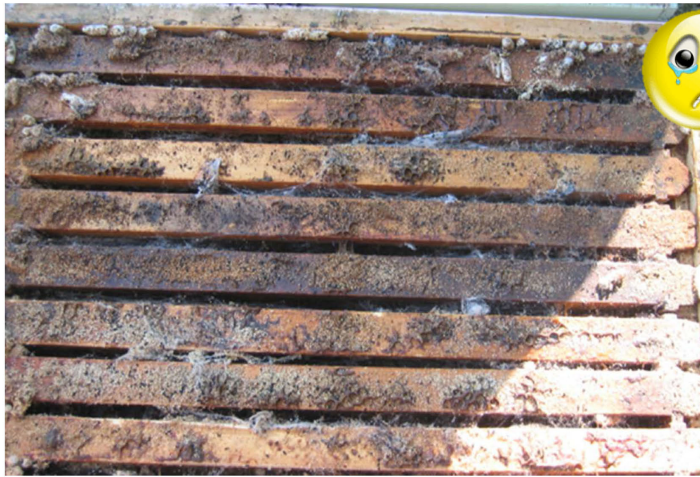
Recognize a healthy...

## Hive Population



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Recognize a healthy...

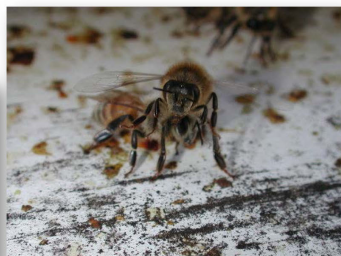


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Recognize a healthy...



## Bee-haviour



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## Bee-haviour



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### Three steps to reducing diseases



- Know what a healthy hive looks like
- Practice common sense bee hygiene
- Keep colonies healthy

### Good hygiene

## Inspect



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## Buying used equipment = fake good idea

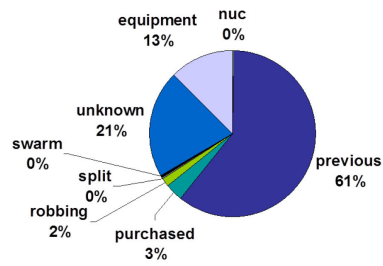


Fig.: New cases of AFB (Pennsylvania)



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## Three steps to reducing diseases



- Know what a healthy hive looks like
- Practice common sense bee hygiene
- Keep colonies healthy



## Keep hives healthy



- (be able to) inspect
- Feed
- Re-queen
- Preventive care
- Stay informed

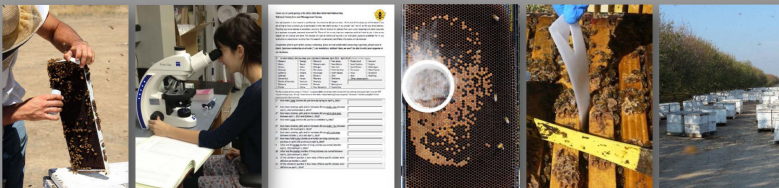
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## Introducing the UMD Honey Bee Lab



## The UMD Bee Lab

### Extension & Research

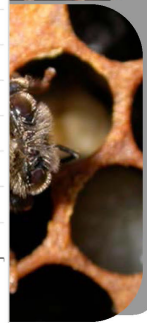
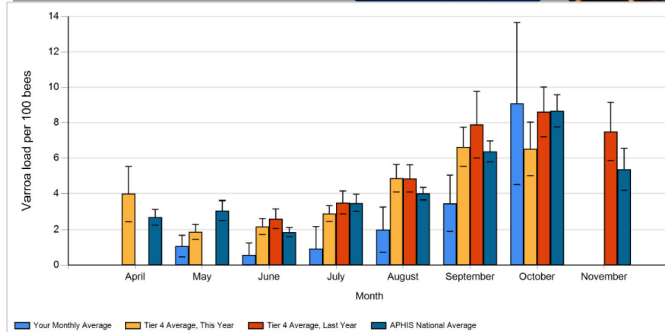


- Improve understanding of colony health
- Reduce colony mortality



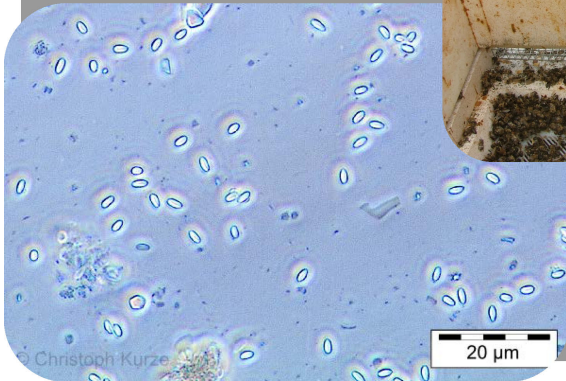
## Disease Load Monitoring

### Varroa mites



## Disease Load Monitoring

### Nosema



20 µm



## Disease Load Monitoring

### Pollen



# Please take the Bee Informed Partnership Loss and Management survey!

Beeinformed.org  
Goes live on **April 1**

