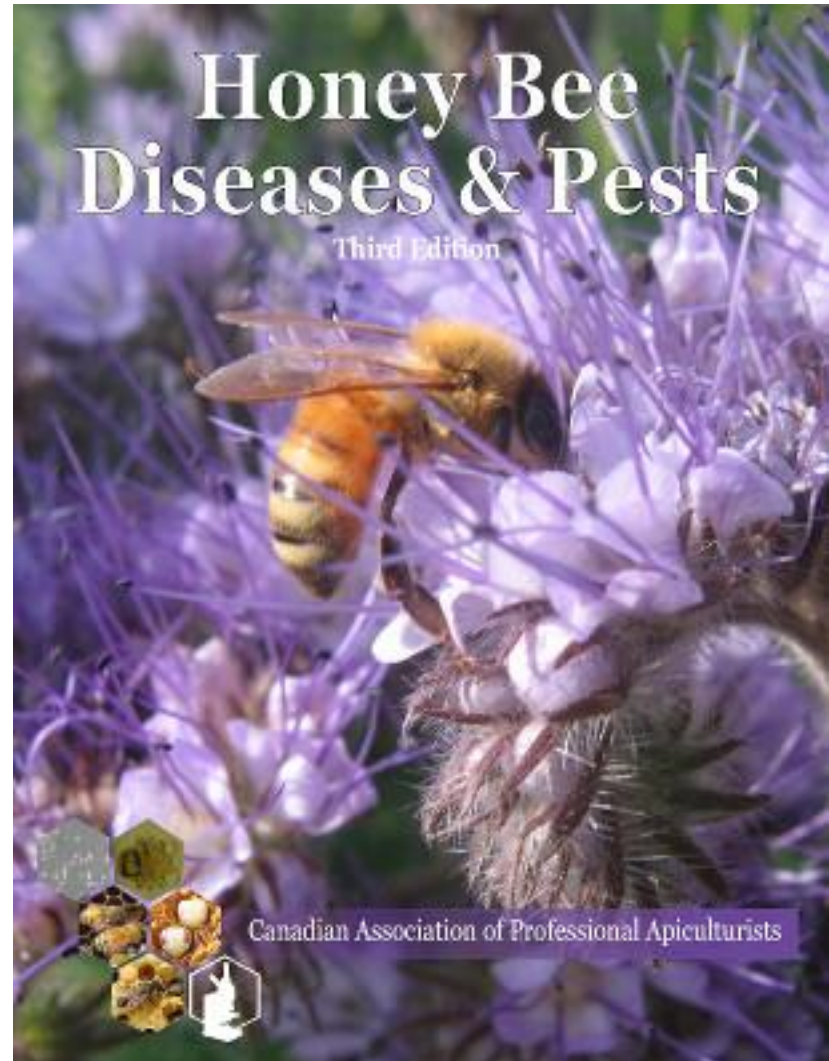


# Fletcher Colpitts - Chief Apiary Inspector for NB

- Also do inspections on PEI



# All livestock have diseases and pests – Bees are no different



Third Edition now available from CAPA

# HONEY BEE DISORDERS



Bacterial Diseases

AFB , EFB

Fungal Diseases

Chalkbrood

Viral Diseases

Sacbrood

Protozoan Diseases

Nosema

Honey Bee Parasites

Varroa & Tracheal Mites

Pests

Wax Moth, SHB

Predators

Skunks, shrews

Ask your brood if you have any  
problems??



# Know what healthy brood looks like

## Know what healthy brood patterns are



Solid pattern



Spotty pattern ? **WHY**

## When inspecting : Visual signs

- Look at 3 frames of brood
- Look at brood patterns



SOLID OR SPOTTY BROOD PATTERN

# VISUAL SIGNS – Holes in cappings

Disease



Closure



Emerging



# Bacterial Diseases



AFB – American Foulbrood

EFB- European Foulbrood



# DETECTING BACTERIAL DISEASES

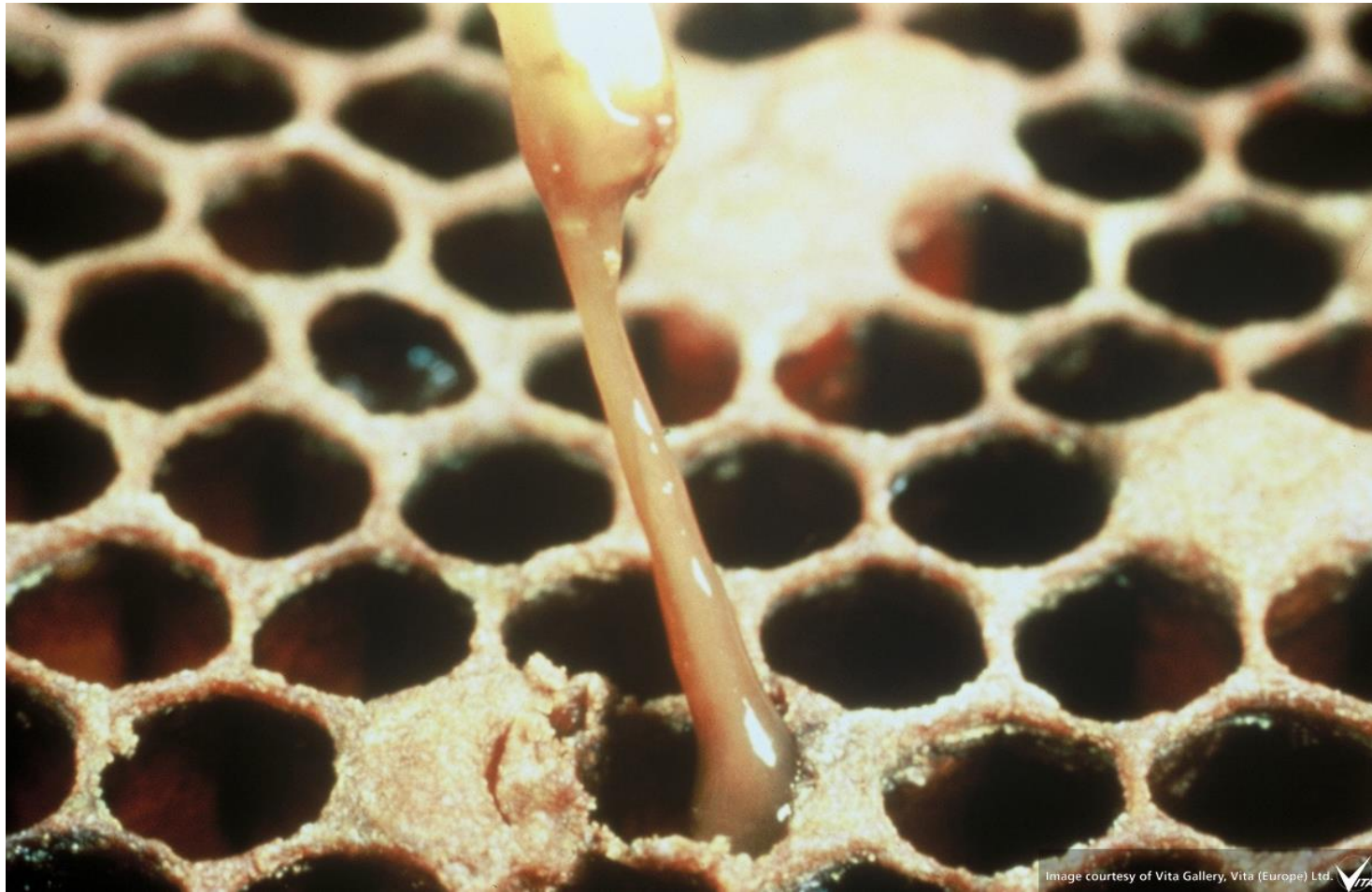
## AFB / EFB



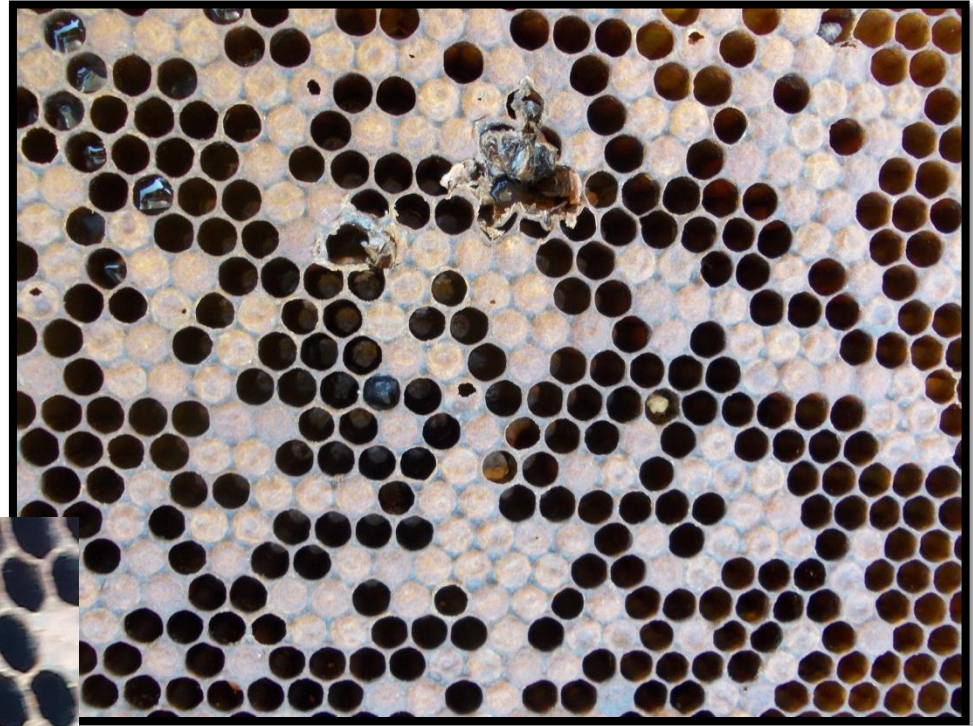
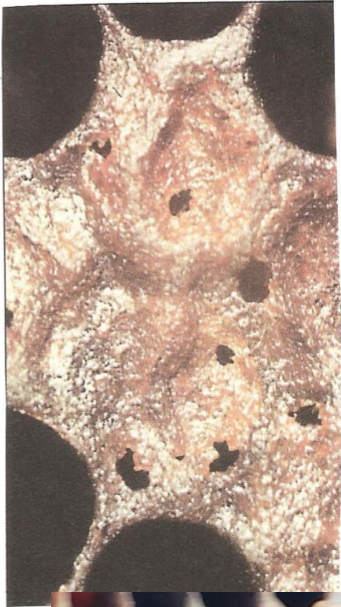
- At what age did the larva die?
- Is the cell capped?
- What color is the larva?
- Is there a foul smell?

# WHAT IS AFB

AFB is an infectious disease caused by spore-forming bacterium *Paenibacillus larvave*

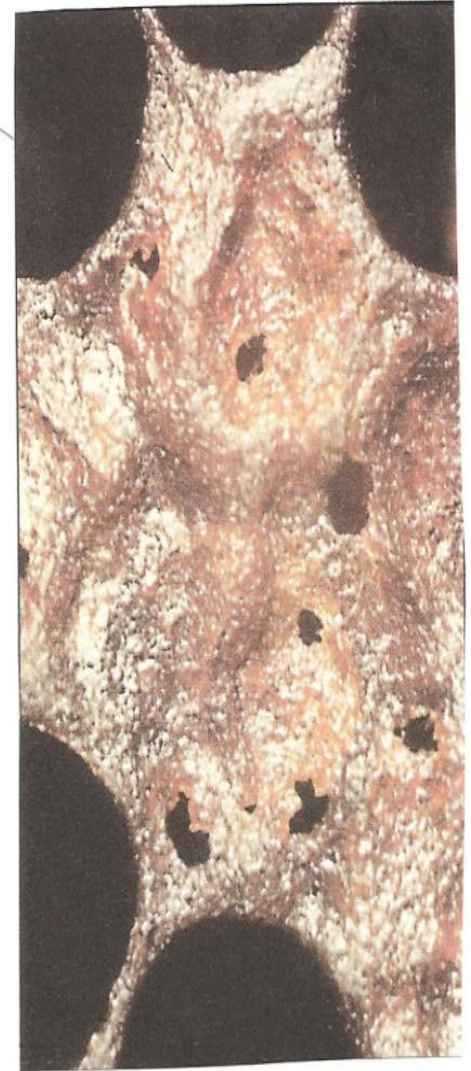


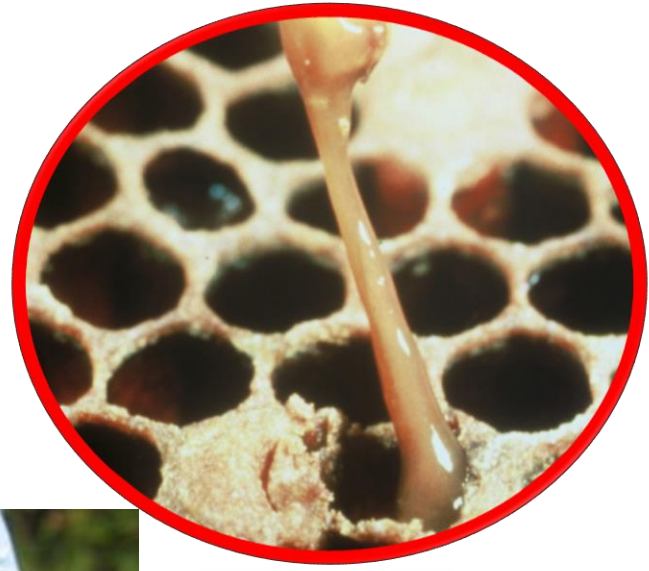
# Perforated cell cappings



# DETECTION OF AFB

- Unhealthy brood pattern
- Sunken cappings
- Perforated cappings
- Dead or discolored larvae
- Scale in cells (final stage)
- Foul odor







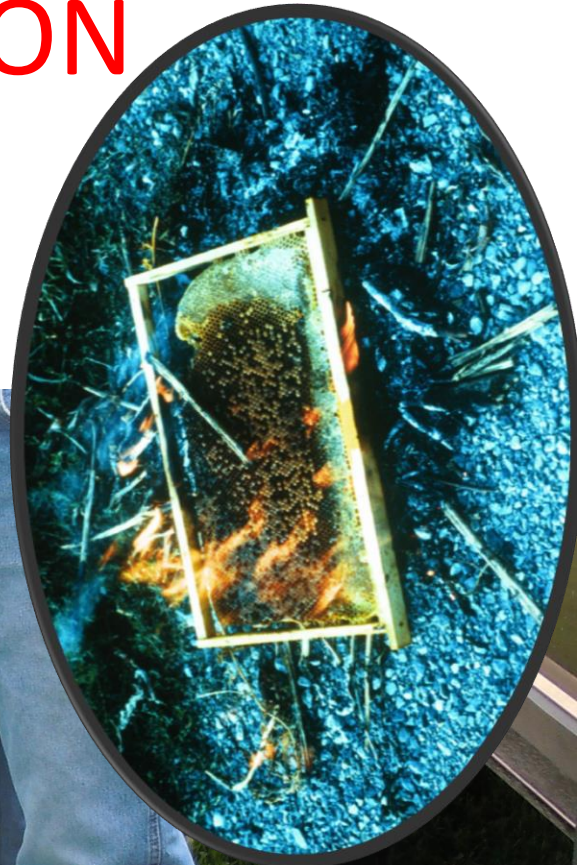
# TREATMENT & PREVENTION

## WHEN AFB IS FOUND

- Burn all infected comb and bees (The best way to handle this deadly contagious disease)
- \*Scorch all empty supers and inner covers
- \*Treat all remaining colonies with oxytetracycline

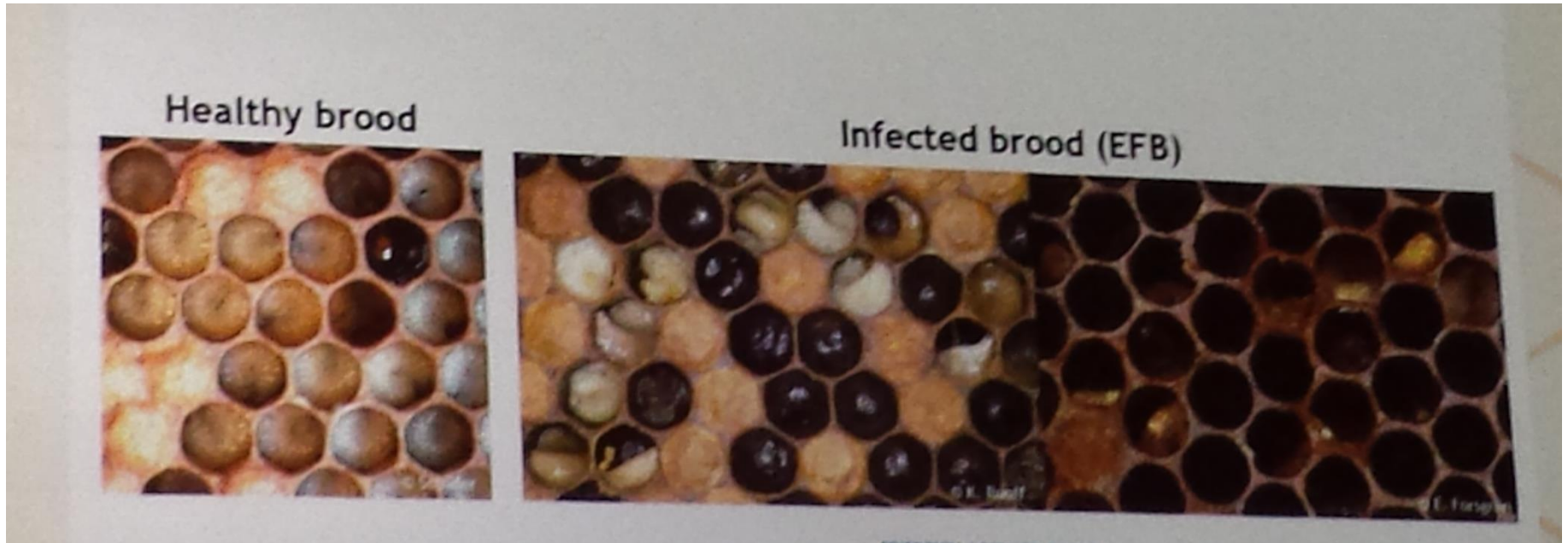


# PREVENTION





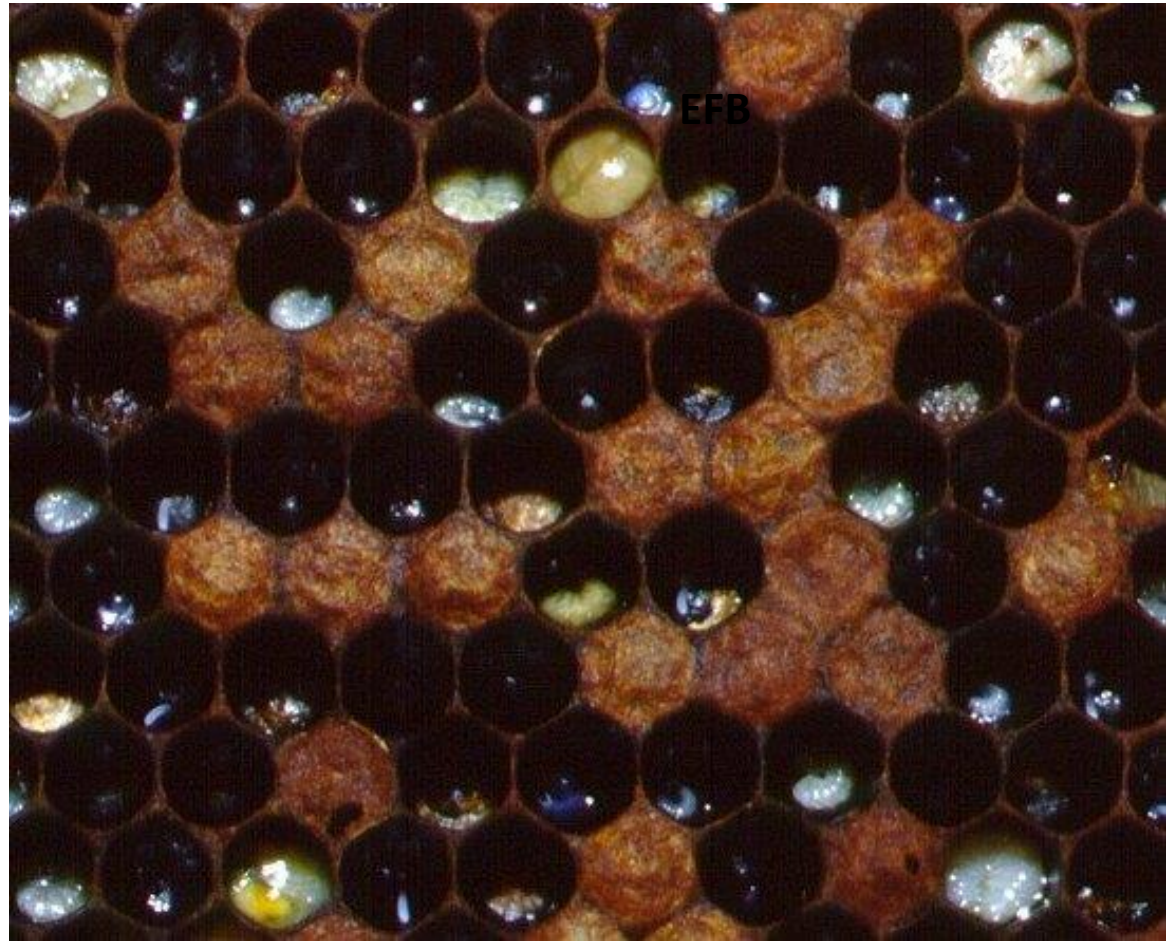
# European foulbrood (EFB)



- Infected larva die before capping at 3-5 days old
- Color change from pearly white to yellow/brown
- Larva twisted around the walls

# New Challenge last few years

Distinguish between AFB and **late stage EFB**



# Fungal Diseases





**SIGNS ON LANDING BOARD**



**MUMMIES INSIDE ON  
SCREEN BOTTOM BOARD**



# VIRAL DISEASES





- LARVAES THAT LOOK LIKE A WATERY SAC .
- CAN BE PULLED OUT IN ONE PIECE
- WHEN SAC IS PUNCTURED LIQUID COMES OUT
- SAC IS BLACK IN COLOR

# PROTOZOAN DISEASES





# Nosema apis/ Nosema ceranae/ dysentery???????



# HONEYBEE PARASITICIES



**VARROA AND TRACHEAL MITES**

# Varroa mite

- At least four species, including *Varroa destructor*, *Varroa jacobsoni*
- *We deal with varroa destructor only*



Photo from Bee Culture

Magazine



Photo from Dadant

# VARROA MITES



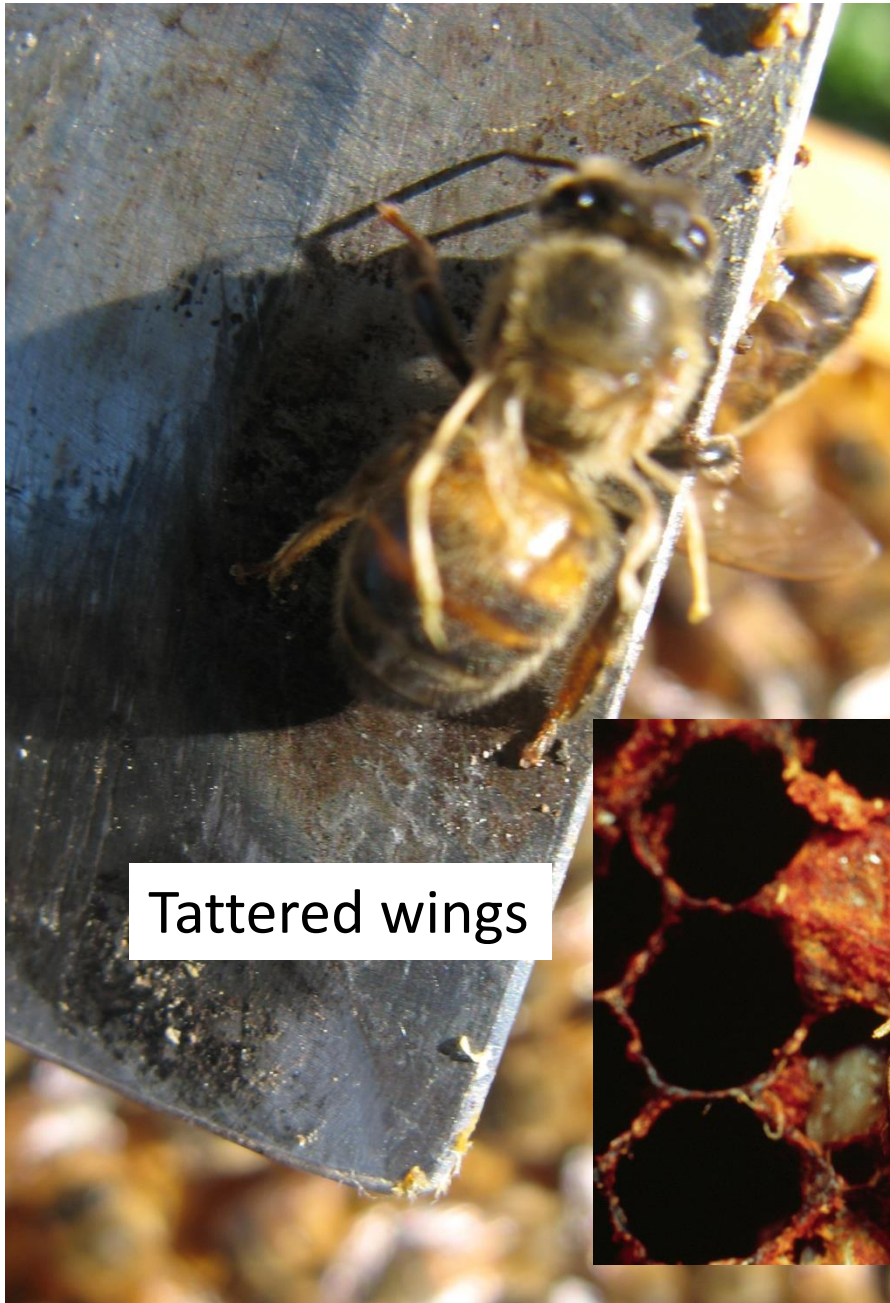


Photo from Bayer Bee

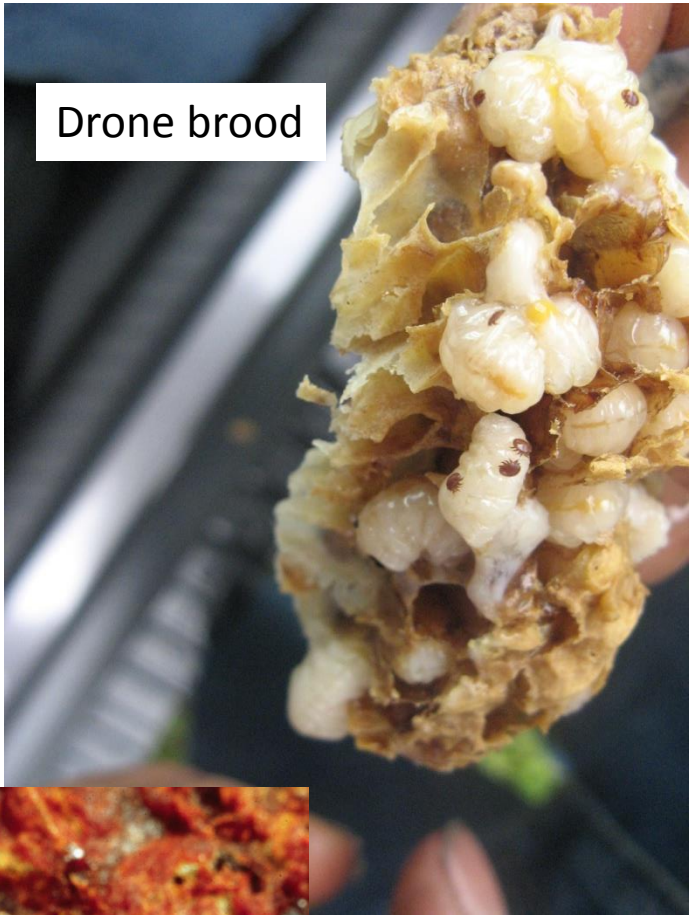
# Fat Body

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- Growth & Metamorphosis
- Storage & Energy/Nutrient Mobilization
- Pesticide Detoxification
- Water Loss/Osmoregulation
- Immune Function
- Temperature Regulation
- Metabolic Activity
- Protein & Fat Synthesis
-  - Vitellogenesis



Tattered wings



Drone brood



# VARROA MITES **Take this serious !**

Monitor and treat to keep levels low





# Tracheal Mites



- Tracheal mites are too small to be observed on bees without the aid of a microscope
- Picture of mite inside the tracheae

# PESTS



WAX MOTH

SMALL HIVE BEETLE

# WAX MOTH



\*Adult moths emerge from the cocoons and mate outside the hives.



# Wax moth trail



# Wax moth web



# Wax moth destroys comb

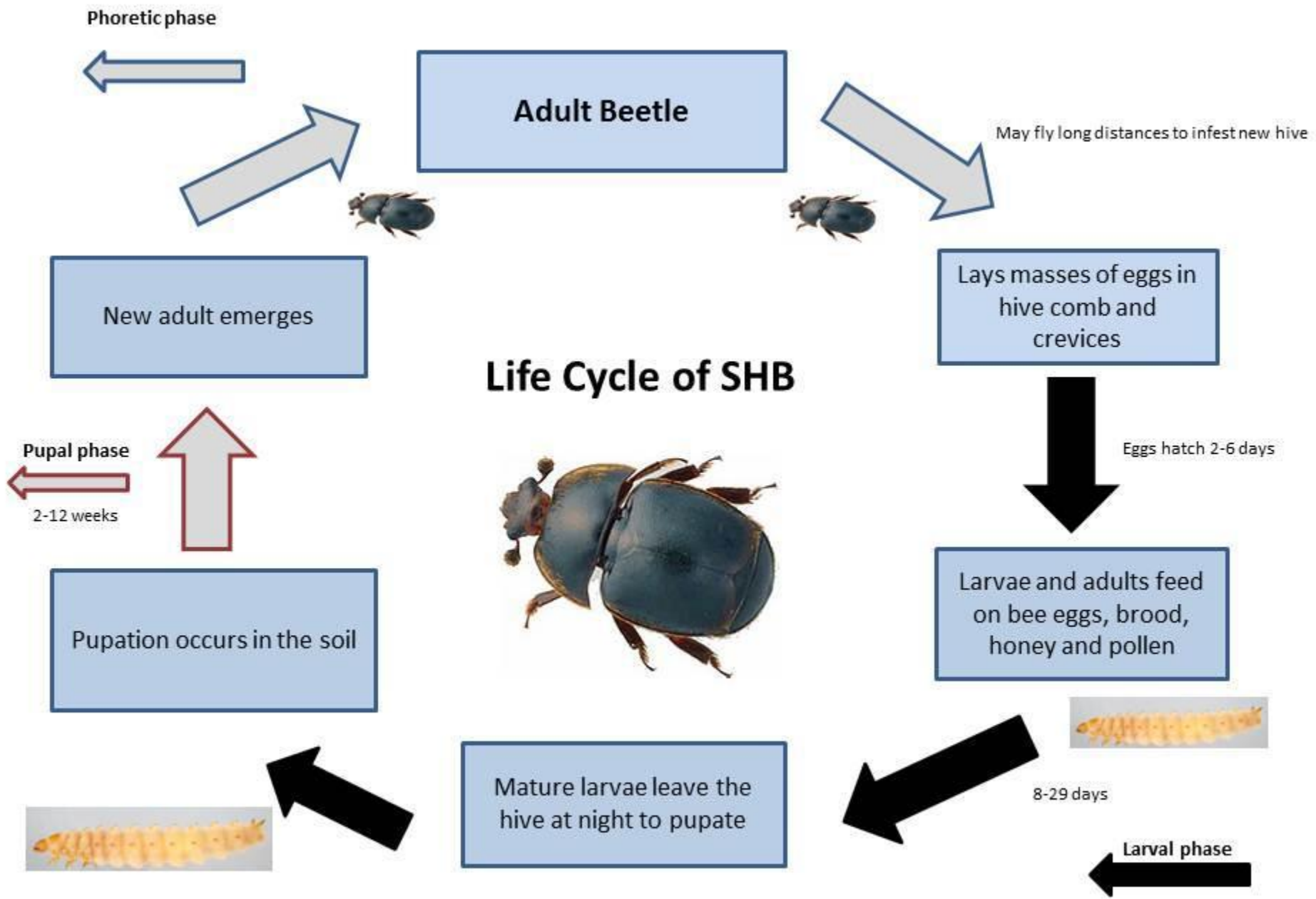


# Small hive beetle, *Aethina tumida* Murray

- Family: Nitidulidae – sap beetles
- Adult flies 15 Km and lays eggs in honey bee colonies



# Life Cycle of SHB





# Wax moth larva (caterpillar)



# Small hive beetle larva (grub)

# Some common sap beetles



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© M. B. Price 2006



© M. B. Price 2006



Source: University of Minnesota extension

# SMALL HIVE BEETLE MONITORING







# Predators



Skunks

Shrews



# SKUNKS



# Raise up hives





# Guards



# PYGMY SHREW (*Sorex minutus*)



Length 40mm

Tail 32mm

Weight 3 grams

# PYGMY SHREW

- Small mammal
- Markedly pointed snout
- Average 40mm body length
- 32 mm tail
- Average weight 3 grams
- Go through a hole less than 1cm
- Insectivores
- Fast as they are small
- Heart rate & respiratory rate of 800 beats per minute
- Rate maintained by consuming 125% of own weight daily





# Recognize the signs













Wings, legs and body parts

# Shrew Droppings

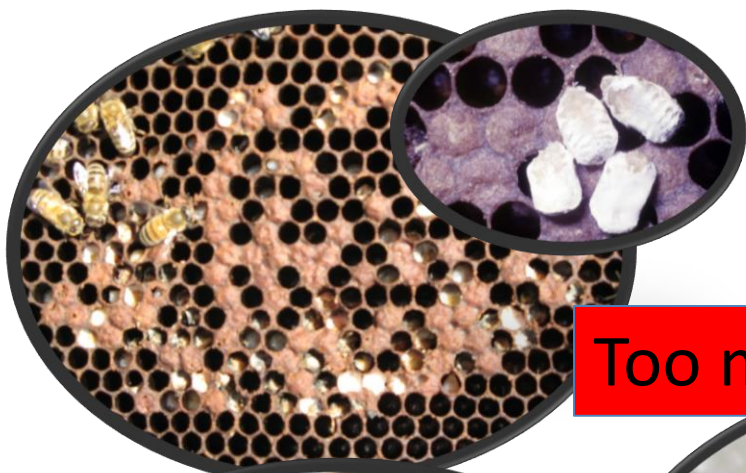


# PREVENTION – Shrew Guards

$\frac{1}{4}$ " MESH

REMOVE IN SPRING WHEN POLLEN STARTS





Too much bad news!!

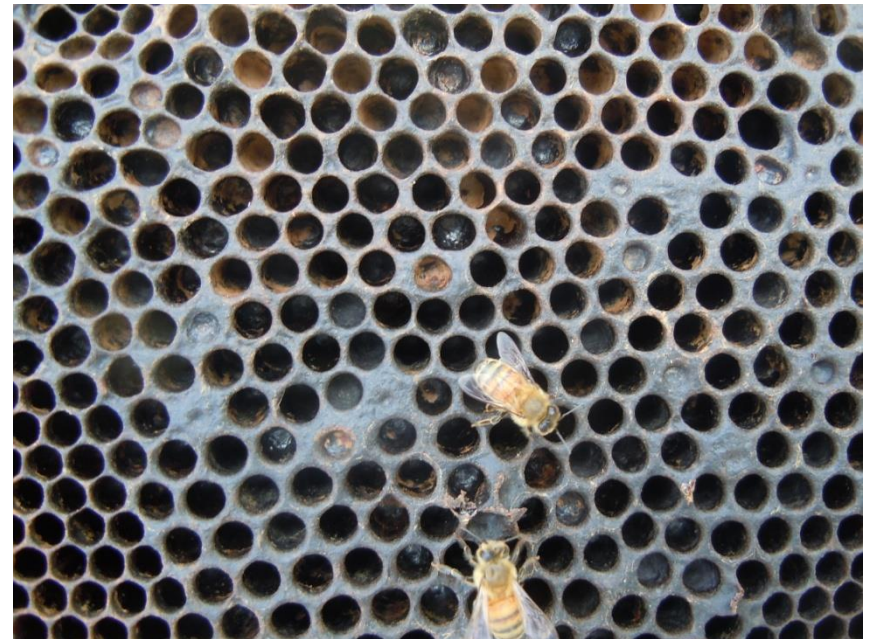


One management practice helps the hive thrive!!



# BROOD COMB REPLACEMENT

- Reduces level of disease
- Eliminates chemical build up in comb
- Reduces level of stress on colony
- Allows rapid buildup of colony





# Unproductive comb



**Debris on landing board**



**Chewed down comb**





**Chewed down comb**



**Renewed comb section**



# NEW CHALLENGES IN BEEKEEPING

Black comb/viruses & pathogens  
have become a greater problem with  
varroa mites



**THANK YOU**

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