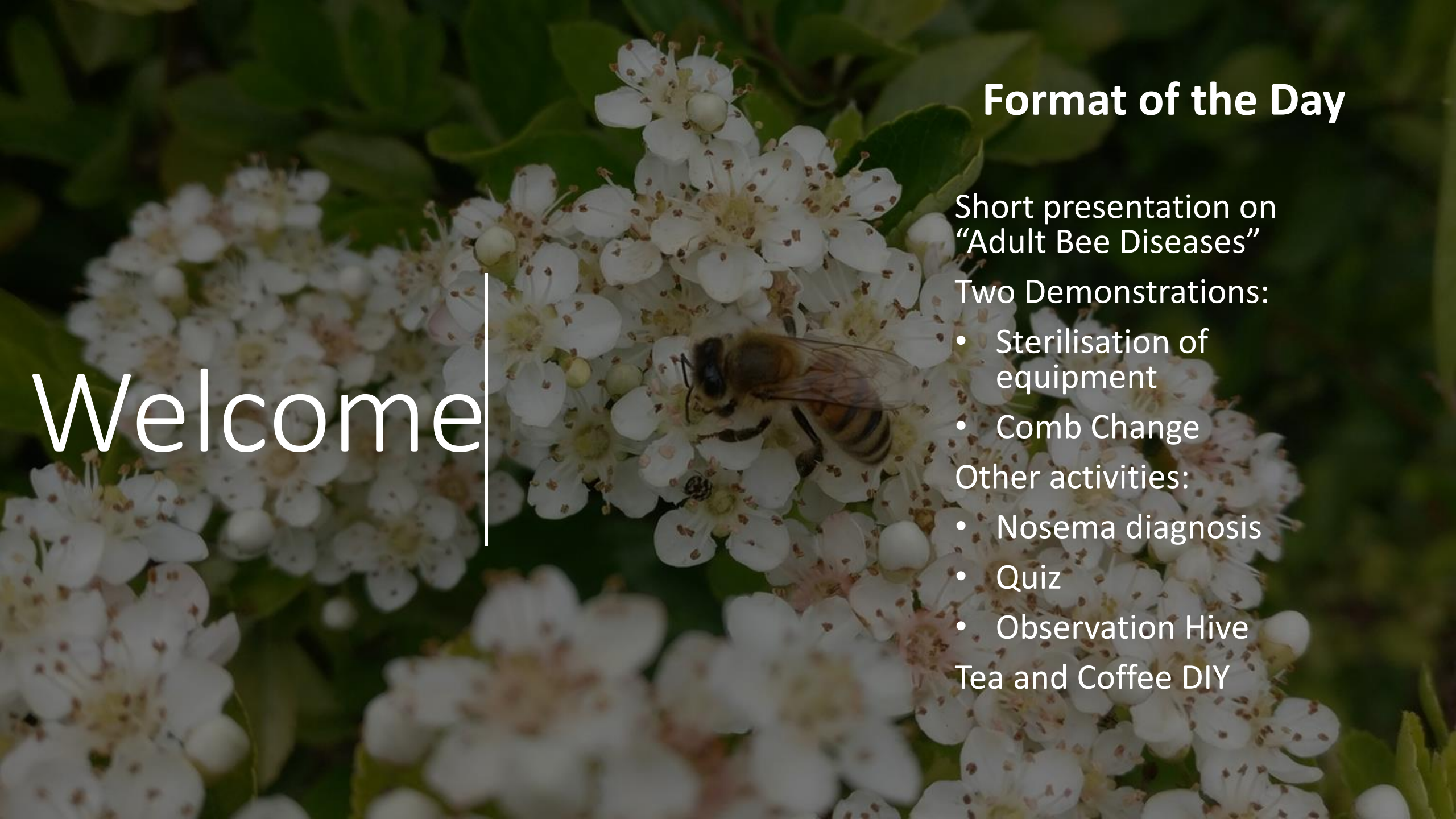


Welcome

Format of the Day

Short presentation on “Adult Bee Diseases”

Two Demonstrations:

- Sterilisation of equipment
- Comb Change

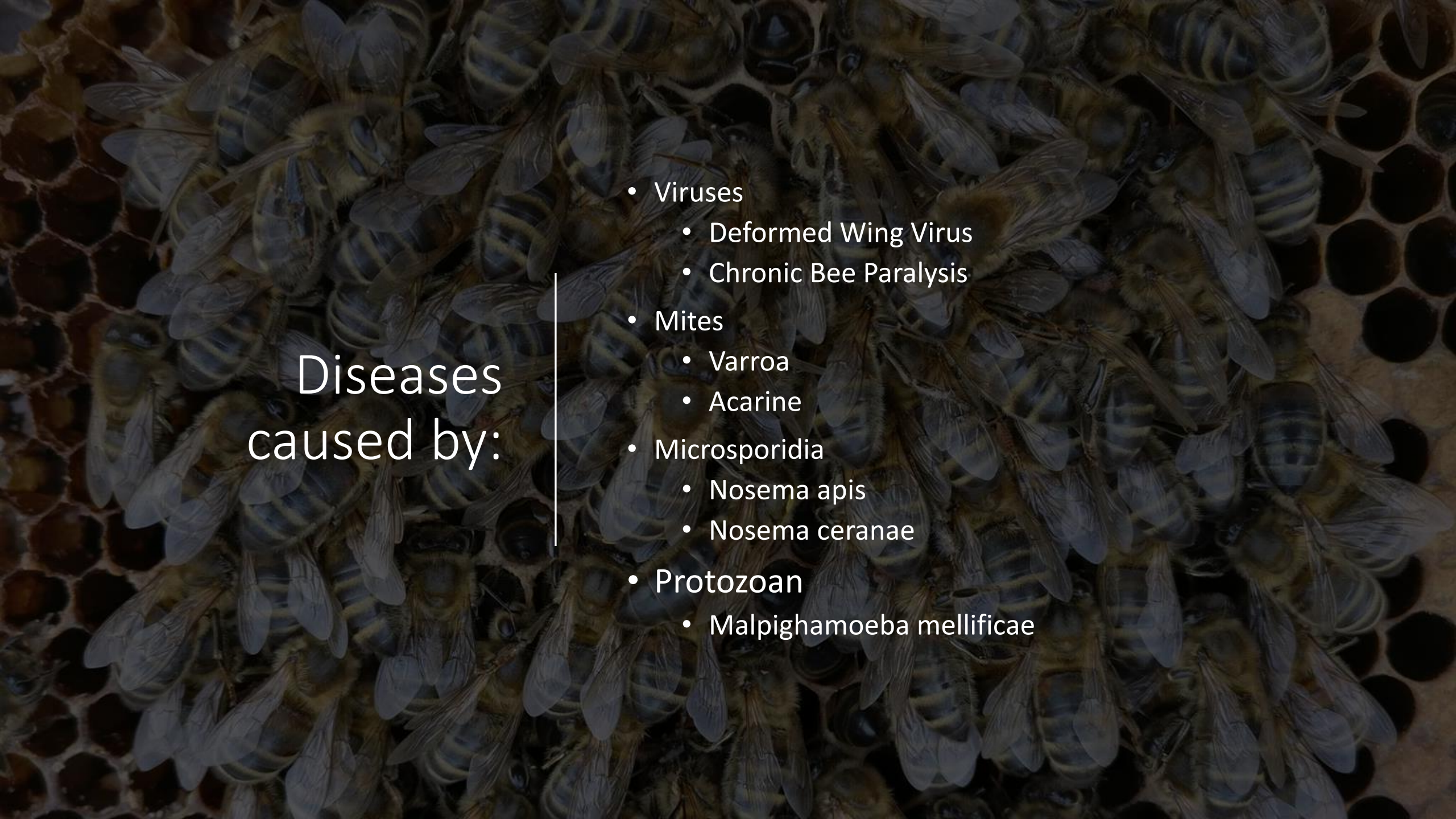
Other activities:

- Nosema diagnosis
- Quiz
- Observation Hive

Tea and Coffee DIY



Adult Honey Bee Diseases



Diseases caused by:

- Viruses
  - Deformed Wing Virus
  - Chronic Bee Paralysis
- Mites
  - Varroa
  - Acarine
- Microsporidia
  - Nosema apis
  - Nosema ceranae
- Protozoan
  - Malpighamoeba mellificae

Deformed Wing Virus

- Visual diagnosis does not work!
  - Bees with deformed wings might not have the virus
  - Bees without deformed wings can have the virus
- Exists at low levels in colonies without varroa
- Varroa diminishes immune system
- There are variants; A and B prevalent in UK

Closely Associated with levels of Varroa infestation

Image from BBKA course in a case, Gerry Collins

Deformed Wing Virus

- Transmitted in brood food, queen's ovaries and drones
- Lifespan of bee reduced to 48 hours
- Affected bees ejected from the hive
- Winter losses

Drone with DWV

Keep varroa in check, deformed wing virus will abate

Chronic Bee Paralysis

- Shiny hairless bees
- Trembling
- On top bar
- Prevented from entering the hive
- K-wing

Significant rise in cases in recent times

Imports of bees?

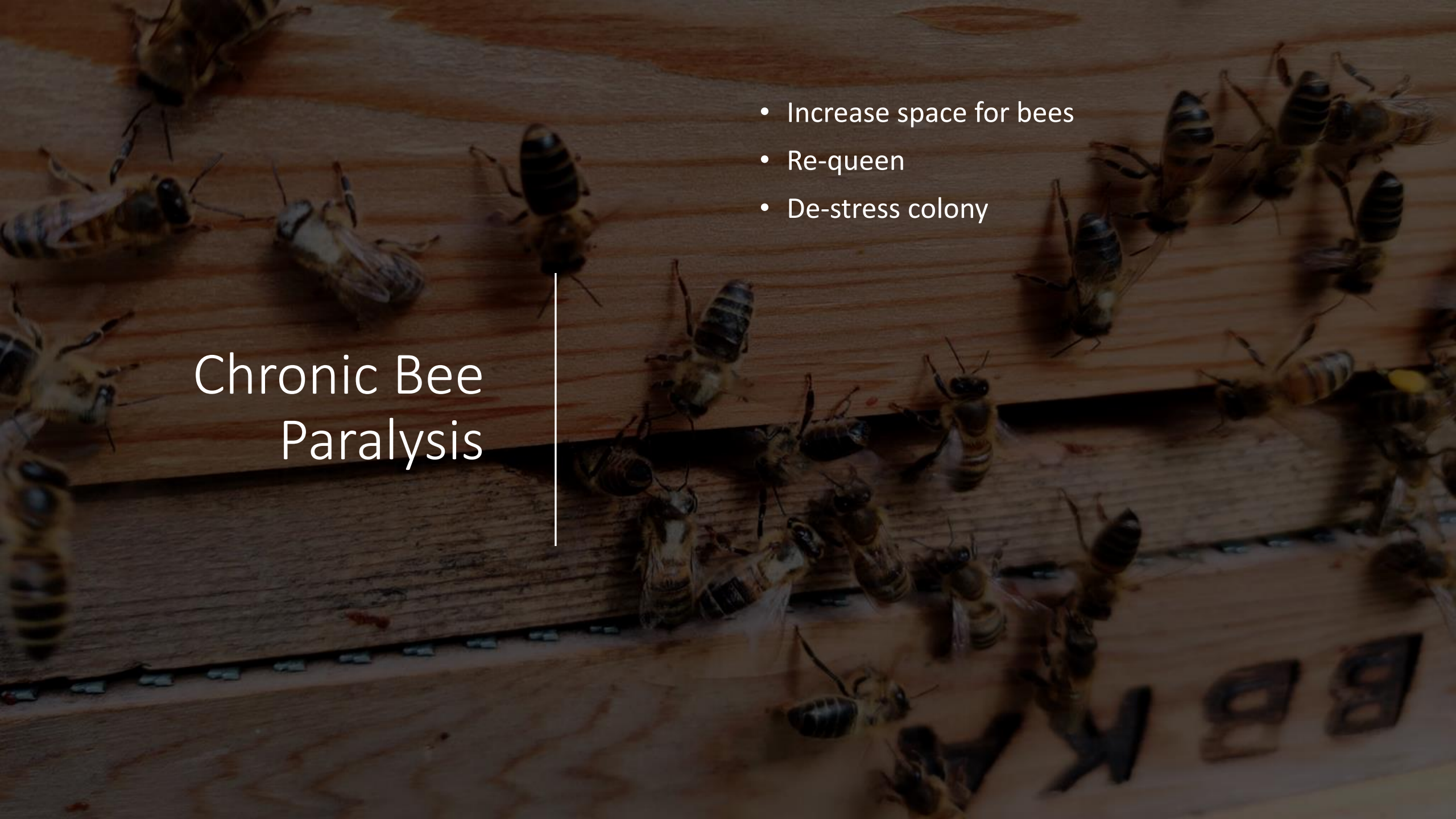
Weakens colony, may not survive winter

Spreads in overcrowded hives

Hairs break off exposing cytoplasm

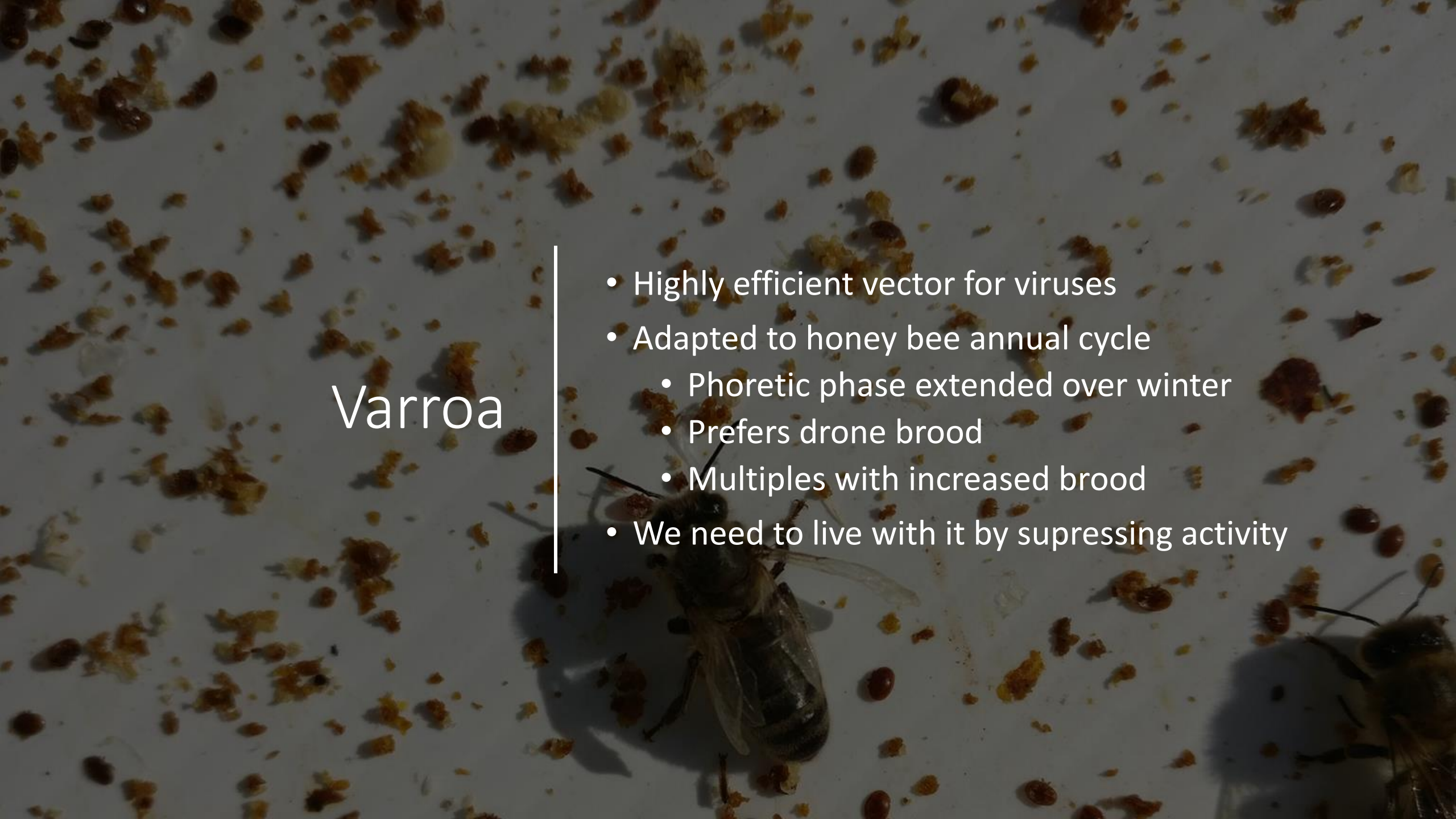
Queen breeding for larger colonies a cause?

BBKA keen to support research into CBPV



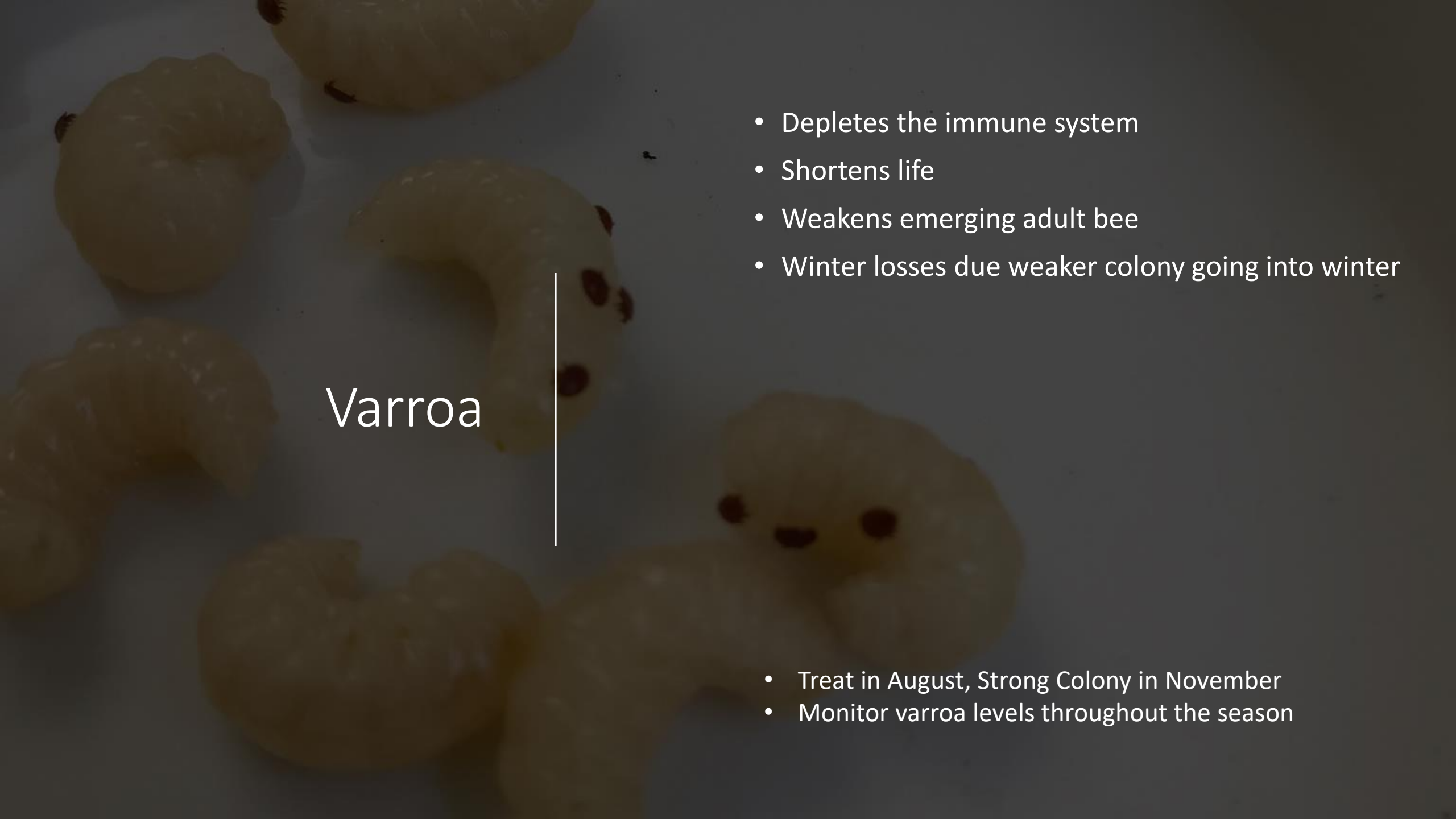
Chronic Bee Paralysis

- Increase space for bees
- Re-queen
- De-stress colony



Varroa

- Highly efficient vector for viruses
- Adapted to honey bee annual cycle
  - Phoretic phase extended over winter
  - Prefers drone brood
  - Multiples with increased brood
- We need to live with it by supressing activity



Varroa

- Depletes the immune system
- Shortens life
- Weakens emerging adult bee
- Winter losses due weaker colony going into winter

- Treat in August, Strong Colony in November
- Monitor varroa levels throughout the season

Parasitic Mite Syndrome



- Severe infestation
  - Abandoned brood
  - Holes in capping’s
  - Pepper pot brood pattern
  - Decrease in number of bees
  - Emerging bees dead with extended proboscis
- Colony collapse
- Death of colony during the season

Acarine

- Tracheal mite
- Hangs on adult bee
- Enters large trachea via 1st Spiracle
- Pierces trachea and feeds on haemolymth

Image BBKA course in a case, *USDA ARS Image Gallery*

Acarine

- Varroa treatment manages acarine
  - Will acarine return?
- Test remove the head and examine large trachea

Symptoms like CBPV

- K-wing
- Bees ejected from hive
- Bees on grass around the hive

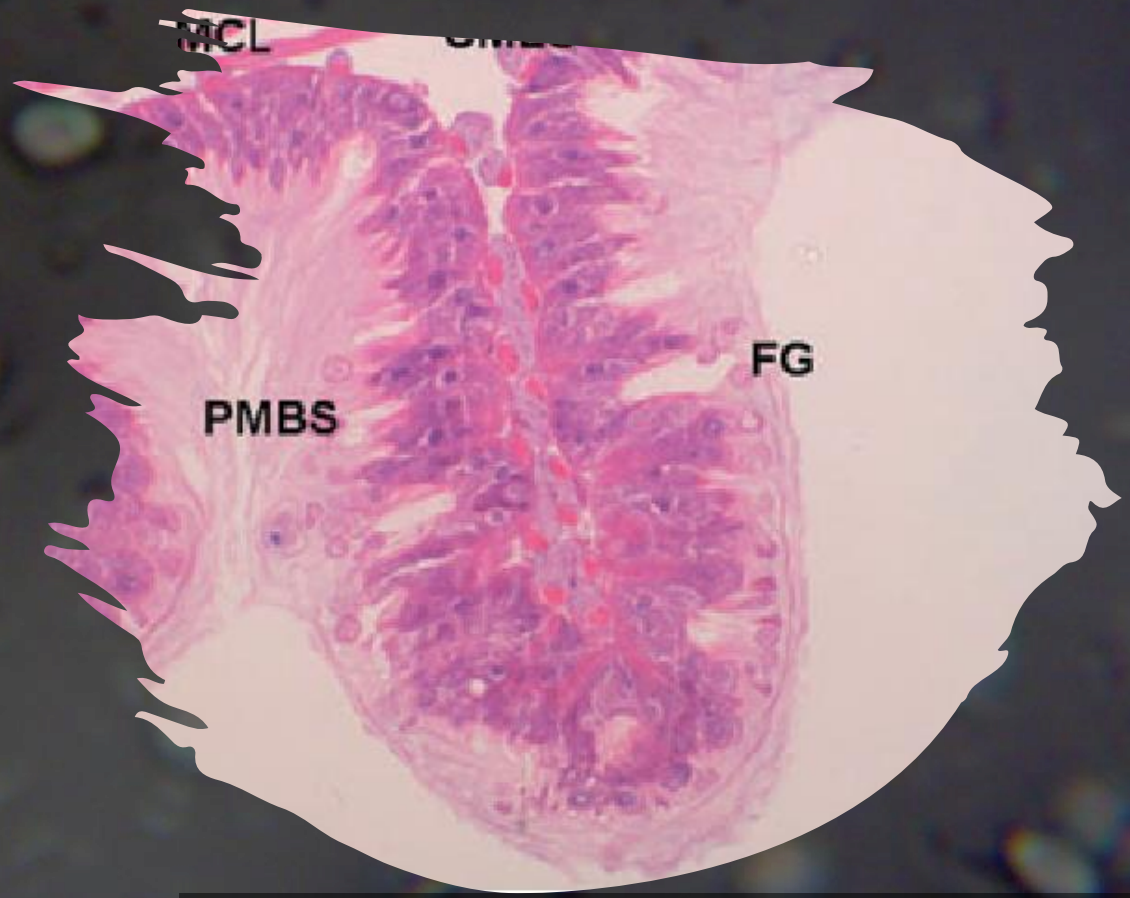
Isle of Wight disease 1904

- Br Adam v R.O.B. Manley
- Bailey 1964 resolved

Image BBKA course in box, Graham Royale

Nosema

- Nosema apis and Nosema ceranae
  - Apis associated with Spring dwindle
  - Ceranae systemic not seasonal
- Spore forming microsporidia
- House bees consume spores
  - Apis cleaning hive
  - Ceranae through food exchange
  - Germinate in gut
  - Infect cells lining the gut
  - Starving the bee of nutrition, specifically proteins



©M. Higes, R. Martín-Hernández, P. García-Palencia, P. Marín, A. Meana

Nosema

Nosema ceranae

- Attacks the basal cells
- Depletes the immune system
- Sudden collapse of colony

- Deprived of protein
  - Glands do not develop
  - Become foragers younger
  - Reduced lifespan
  - Bees die away from hive
- Dysentery indication not a symptom
- Colony dwindles and collapses

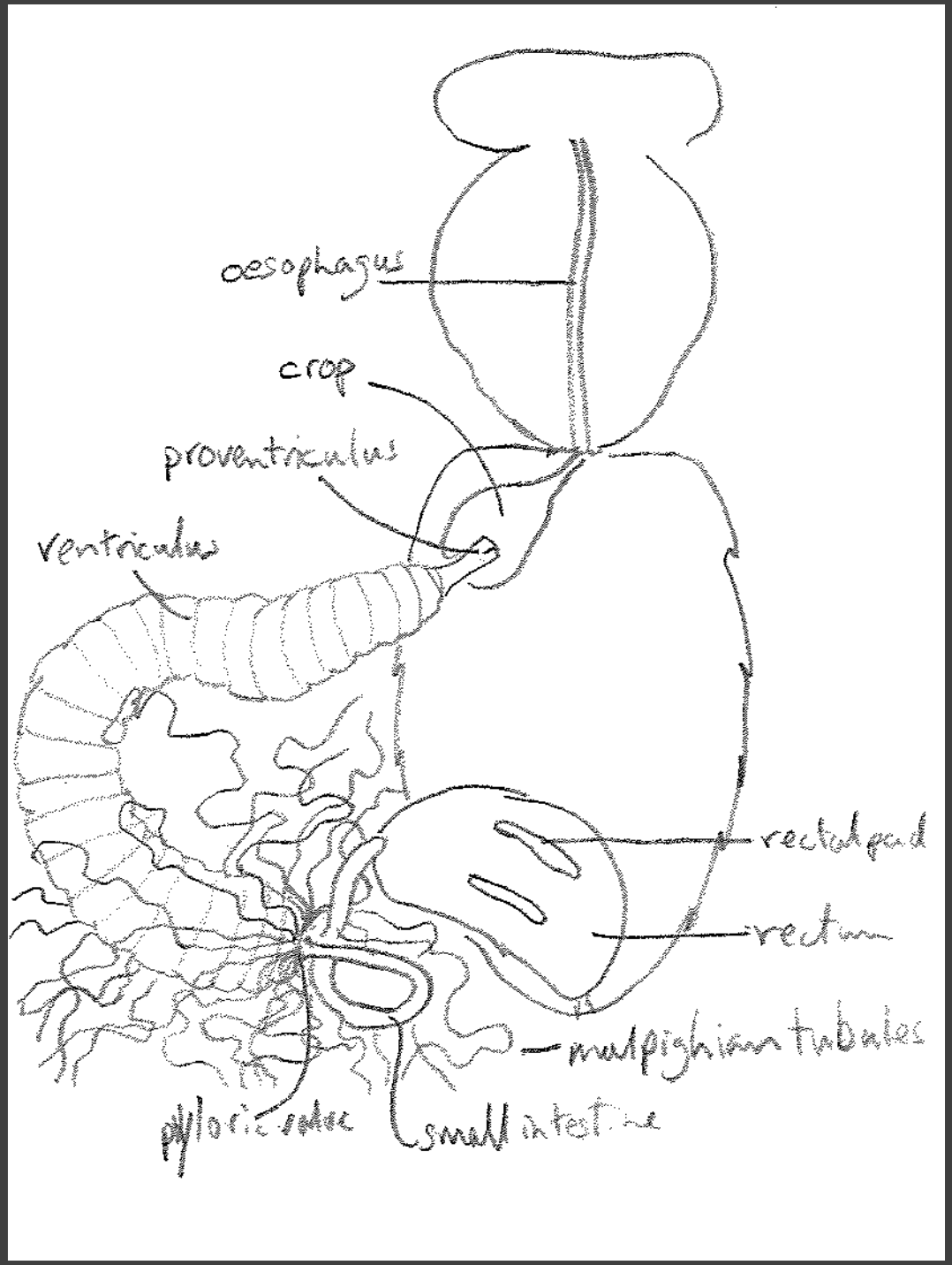
Nosema apis

- Most dangerous in Spring as brood food rationed
- Later in the season forage more abundant so survival

Comb change is only prevention and treatment

Malpighamoeba

- Cyst forming single cell animal
- Emerge in gut
- Travel to Malpighian tubules
- Attack the lining
- 3-4 weeks form cyst and passed to excretory system
- No real affect on bees as they have 100 tubules



Any Questions

