West Suffolk Beekeepers

Beginners

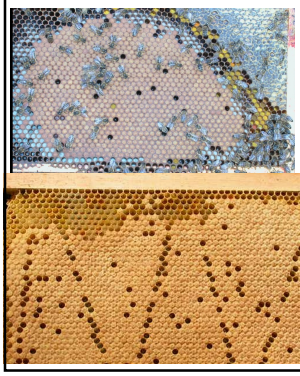
Pests and Diseases

What does healthy brood look like?

unsealed brood

- single egg at bottom of cell
- Eggs next to small larvae
- 'C' shaped, white, segmented larvae
- laying at bottom of cell
- glistening in brood food
- no discolouration

sealed brood



- Cappings biscuit coloured/ digestive
- Slightly domed
- Regular pattern
- Rugby ball/ wall to wall
- Pollen and honey around top edge
- No holes/ sunken
- lays in centre /emerge first
- wires and heater bees

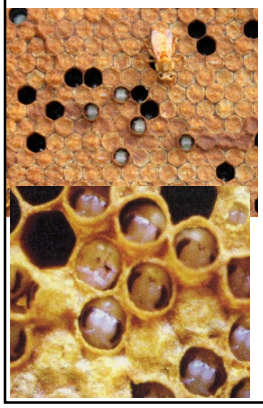
Sac Brood

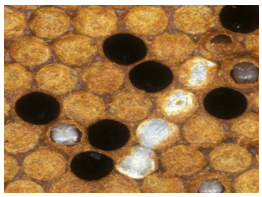
- virus , prevents final moult
- chinese slipper
- dead larvae stretched out in fluid sac
- turns yellow then black then brown scale
- house bees pick
- forage early, stop feeding larvae
- if severe re-queen

Chalk Brood

- **fungus**, **Ascosphaera apis**
- kills after capping
- white fluffy larvae
- chalky white mummies
- spread by spores, stick to comb and bees - dark ones
- spread as removed
- replacing comb reduces incidence

Bald Brood



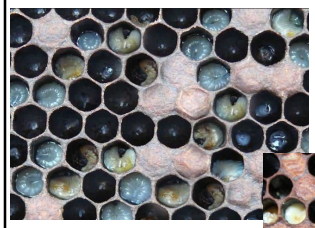


- Cells uncapped
- Often wax moth tunnelling, bees remove
- Can be genetic
- exposed pupae may develop normally/ deformed
- maintain strong colonies

'E'uropean Foul Brood

early before capping

- **bacterium – Melissococcus plutonius**
- infects very young larvae
- multiplies in the ventriculus – gut , spread when the connection with hindgut opens and voids into cell
- house bees ingest it while cleaning and infect brood food they feed to young larvae
- starves the larvae consuming its food
- infected larvae:- twisted and misshapen
- off-white, greenish or brown
- Loses segmentation looks like melted wax
- dries to scale that **can** be removed



- Spreads if you touch comb then another colony
- moving comb

- robbing/ drifting

What can happen?

- ❑ nurse bees detect it and remove larvae
- ❑ larvae dies and turns to scale
- ❑ if the larvae is well fed it survives and pupates
- ❑ often not spotted early in season lots of nurse bees
- ❑ during nectar flow nurse bees recruited to foraging fewer to feed brood
- ❑worst in stop/ go flow and weather

What must you do?

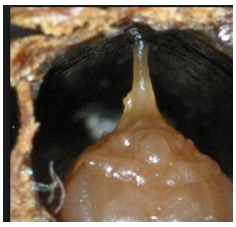
- ❑ reduce the entrance
- ❑ stop spread by the beekeeper, tools, suit, smoker etc
- ❑ Call the bee inspector inspector uses a lateral flow device to check
- ❑ **Standstill Order**
- ❑ shook swarm, clean and scorch boxes
- ❑ destroy brood
- ❑ if severe- destruction by burning

'A'merican Foul Brood

after capping

- ❑ bacteria Paenibacillus larvae rod shaped bacterium , long lasting tough spores
- ❑ taken in with brood food
- ❑ spores germinate in gut
- ❑ moves into gut lining and then the haemolymph
- ❑ multiply when larvae is fully fed and sealed
- ❑ prepupa/pupa killed by 25 million spores

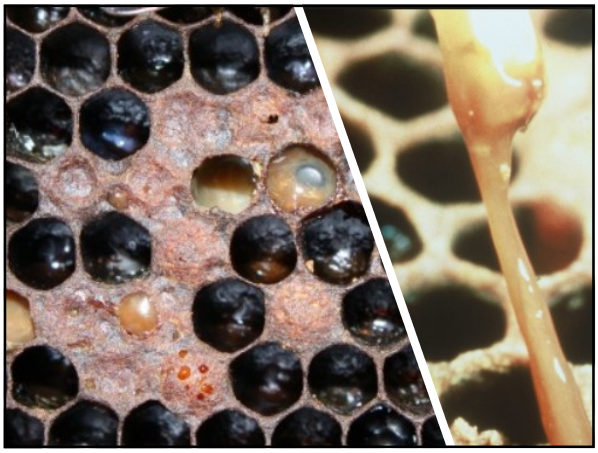
- Cell cleaning house bees become contaminated



- can get into every part of the colony, comb, boxes etc
- can remain infective for 35 years

How is it spread?

- drifting
- swarming, hiving unknown swarm
- robbing, weakened colonies get robbed
- moving combs
- uniting a weak colony
- feeding infected honey
- buying old equipment
- migratory beekeeping



What do you see?

- ❑ dark, sunken cappings, greasy
- ❑ cappings may be chewed by bees when detected, these are ragged irregular holes
- ❑ the decaying larvae forms a sticky rope (destroy in smoker)
- ❑ pepperpot brood
- ❑ dark scale at bottom of cell – **can't** be removed
- ❑ may be an unpleasant smell from bacteria

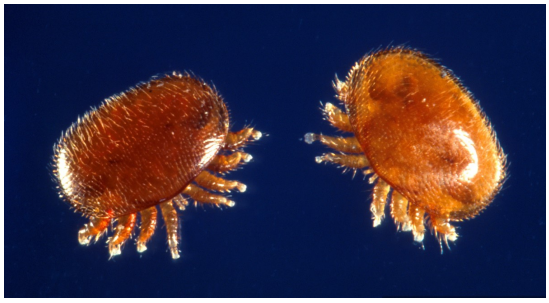
Comb held with light over shoulder

What must you do?

- ❑ reduce entrance
- ❑ contact bee inspector
- ❑ once confirmed with lateral flow device
- ❑ Standstill order
- ❑ destruction of bees , comb,
- ❑ boxes and other equipment sterilised with blow torch
- ❑ gloves, suit, footwear, strong washing soda
- ❑ apiary checked and again a few weeks later

Adult Bee Diseases and Pests

Varroa
1992- ?



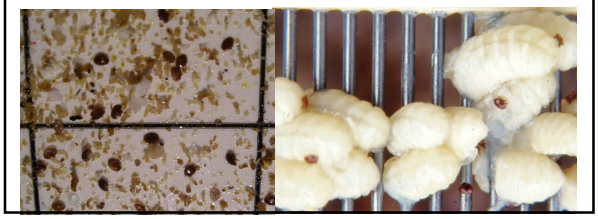
Why is varroa such a problem?

- ❑ feeds on fat bodies of adults and brood
- ❑ weakens the bees and introduces pathogens
- ❑ egg carrying female enters cell before capping
- ❑ hides in brood food with breathing tube
- ❑ after capping establishes feeding site on larvae
- ❑ lays 1 male and females which mate
- ❑ males die, females leave cells onto bees
- ❑ prefers drone brood 10-12 times more frequently

What do you see?

- ❑ Infestation slows the replacement of old adults with healthy young
- ❑ Brood rearing, foraging and defence diminish
- ❑ Many mites on adult bees
- ❑ Deformed wings and abdomens
- ❑ Severe infestation – parasitic mite syndrome

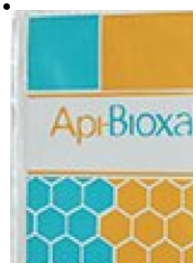
- now endemic not notifiable
- need to control mite numbers below harmful threshold of 1000
- requires monitoring at least 4 times
  - Mite counting over 7 days
  - Drone brood uncapping



What can you do?

- 2 forms of control
  - **varroacides – medicines!**
  - **Biotechnical(bailey comb change)**

Varroa treatment

- 


Oxalic acid

VETERINARY MEDICINE ADMINISTRATION RECORD – TO BE KEPT FOR 5 YE

NAME:	ADDRESS:
APIARY NAME/LOCATION:	POST CODE:

TO BE COMPLETED AT TIME OF PURCHASE					TO BE COMPLETED AT TIME OF ADMINIS				
Name and Address of Supplier of Medicinal Product	Date Purchased	Identity and Quantity of Medicinal Product			Date of Administration	Hive numbers/ID	Duration of treatment	Withdrawal period	Name of person administering veterinary medicine
		Name	Batch No	Quantity					

Natural mite drop is related to colony size;
Colony collapse is very likely before the end of the season if average daily mite drop for a normal colony exceeds the following:

Time of Year	Daily mite drop
April	0.5
May	6
June	10
July	16
August	33
September	20

IPM
Integrated Pest Management

- no attempt to eradicate
- keep numbers below significant harm
- **good husbandry is key**
- **Control at many points of the year**
- **Management to reduce use of varroacides**
- **Use of 2 unrelated varroacides**
- **Flexible control strategies to suit levels**

Deformed Wing Virus

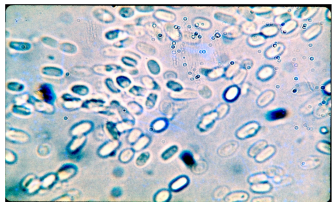
- ❑ affects adult bees, shrivelled wings, stunted bodies
- ❑ can have the virus without the signs
- ❑ can't forage – if spreads colony could collapse
- ❑ keep it low by keeping the mites low

Nosema
the silent killer

- ❑ **2 types n.apis and n.cerana**
- ❑ **microsporidian**
- ❑ **excreted in faeces gets in through the mouth as house bees eat it**
- ❑ **spores pass into mid-gut, germinate**

- halves the life-span of spring or summer bees
- hypopharangeal glands do not fully develop
- become guard and foragers much earlier
- winter bees have less protein in the fat bodies
- in winter rectal contents increase due to water – dysentry

- no visible symptoms
- diagnosis through microscopic examination at x400
- rice shaped



Pesky Pests

- mice
- wood peckers
- Asian Hornet
- wax moth
  - **G**reater- Galleria mellonella
  - Lesser- Achroia grisella

Greater wax moth

- ❑ 25-35mm
- ❑prefers brood comb
- ❑ pupates and chews grooves into wood
- ❑ ruins comb – produces webs and frass

Lesser wax moth

- ❑ 15-20mm
- ❑more a pest on super combs
- ❑ both eat wax

What can you do?

- ❑ keep colonies strong
- ❑ store piles of supers outside with queen excluder top and bottom cover with roof
- ❑ wrap combs in plastic and freeze
- ❑ treat stored supers with bacillus thuringeniensis

Notifiable Diseases and Pests

The Bee Diseases and Pests Control (England) Order 2006

- American foul brood (AFB)
- European foul brood (EFB)
- Small hive beetle (*Aethina tumida*)
- *Tropilaelaps spp*. Mites

Beekeepers in England or Wales who suspect the presence of either AFB or EFB in their colonies are legally required to

- either contact The Animal and Plant Health Agency (APHA) NBU in order to have the colony officially examined by a Bee Inspector,

Apiary Hygiene

Clean tools.

- Use a strong solution of washing soda (300-500g to 1 litre of water)
- Wash gloves in the soda solution
- Collect all waste wax
- Do not transfer brood frames
- Use a blowtorch before reusing equipment
- Never feed the bees honey that has not come from their apiary
- Wash your bee suits regularly Use disposable gloves

Remember….

It isn't all doom and gloom…

It's a joy!