



**CYMDEITHAS GWENYNWYR CYMRU**

**WELSH BEEKEEPERS' ASSOCIATION**



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*The text, and associated image, has intentionally been kept brief, as it is solely to enable the identification of disease. Should you wish to learn more about a particular condition, where appropriate, a link has been provided to enable a deeper study of the subject.*

*We've tried to cover the diseases and conditions you are likely to come across, when inspecting your hives.*

*We hope you find this reference useful.*

*The Management Team  
Welsh Beekeepers' Association.  
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## Table of Contents

<b>Healthy Brood</b>	<b>1</b>
<b>American Foulbrood [AFB]</b>	<b>2</b>
<b>European Foulbrood [EFB]</b>	<b>3</b>
<b>Bald Brood</b>	<b>4</b>
<b>Chalkbrood</b>	<b>5</b>
<b>Chronic Bee Paralysis Virus</b>	<b>6</b>
<b>Deformed Wing Virus</b>	<b>7</b>
<b>Drone Laying Queen</b>	<b>8</b>
<b>Nosema</b>	<b>9</b>
<b>Varroa</b>	<b>10</b>
<b>Parasitic Mite Syndrome</b>	<b>11</b>
<b>Sacbrood</b>	<b>12</b>

## Table of Figures

<b>Figure 1 : Healthy unsealed worker brood</b>	<b>1</b>
<b>Figure 2 : Healthy sealed worker brood</b>	<b>1</b>
<b>Figure 3 : AFB - Fluid drawn out as a string</b>	<b>2</b>
<b>Figure 4 : AFB - Scales</b>	<b>2</b>
<b>Figure 5 : EFB - Infected larvae</b>	<b>3</b>
<b>Figure 6 : Bald Brood – Incomplete capping &amp; raised lip</b>	<b>4</b>
<b>Figure 7 : Chalkbrood</b>	<b>5</b>
<b>Figure 8 : Adult bees affected by Chronic Bee Paralysis Virus</b>	<b>6</b>
<b>Figure 9 : Adult bees infected with Deformed Wing Virus</b>	<b>7</b>
<b>Figure 10 : Drone brood in worker cells</b>	<b>8</b>
<b>Figure 11 : <i>Nosema sp</i> spores [x 400 magnification]</b>	<b>9</b>
<b>Figure 12 : The <i>Varroa destructor</i> mite on a bee</b>	<b>10</b>
<b>Figure 13 : Parasitic Mite Syndrome</b>	<b>11</b>
<b>Figure 14 : Sacbrood - ‘Chinese Slipper’</b>	<b>12</b>

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## **Healthy Brood**

It is important for all beekeepers to be familiar with the appearance of healthy worker brood, in order to recognise abnormalities which may indicate the presence of disease.

### **Unsealed Brood**

Healthy larvae are pearly white in colour. They lie in a distinctive 'C' shape, with the body divided into segments along its length.



**Figure 1 : Healthy unsealed worker brood**

### **Sealed Brood**

The wax cappings on healthy worker brood, are dry looking and slightly convex. An even brood pattern, with few empty cells, suggests the queen is laying well and the larvae are developing normally.



**Figure 2 : Healthy sealed worker brood**

## American Foulbrood [AFB]

If you suspect one of your colonies is infected with American Foulbrood, you are under a statutory obligation to immediately notify a Defra Bee Inspector.

<https://secure.fera.defra.gov.uk/beebase/public/Contacts/contacts.cfm>

**Causative agent :** *Paenibacillus larvae* [a spore forming bacterium]

**Description :** AFB is a disease of the sealed brood, which can appear patchy, the cappings looking sunken, greasy and perforated. The affected larvae die, becoming a formless, viscous slime which can be drawn out as a string, known as the 'rope test'.



**Figure 3 : AFB - Fluid drawn out as a string**

This fluid then dries to form 'scales' which adhere to the lower cell wall, which the bees are unable to remove.



**Figure 4 : AFB - Scales**

**Further Reading :** <https://secure.fera.defra.gov.uk/beebase/index.cfm?sectionid=26>

**Action :**

- Colonies in which AFB is confirmed will be burnt,
- You may be able to claim from Bee Disease Insurance [BDI]  
<http://www.beediseasesinsurance.co.uk/>

## European Foulbrood [EFB]

If you suspect one of your colonies is infected with European Foulbrood, you are under a statutory obligation to immediately notify a Defra Bee Inspector.

<https://secure.fera.defra.gov.uk/beebase/public/Contacts/contacts.cfm>

**Causative Agent :** *Melissococcus plutonius* [a non-spore forming bacterium]

**Description :** EFB is a disease of unsealed brood, the larvae dying before the cell is sealed. The infected larva moves inside its cell, adopting an unnatural attitude, becomes discoloured, loses segmentation and takes on a melted down appearance. It eventually forms a removable scale.



Figure 5 : EFB – Infected larvae

**Further Reading :** <https://secure.fera.defra.gov.uk/beebase/index.cfm?sectionid=26>

### **Action :**

- Colonies in which EFB is confirmed will be burnt if the infection is severe, or treated using the 'shook swarm technique'.
- You may be able to claim from Bee Disease Insurance [BDI]  
<http://www.beediseasesinsurance.co.uk/>

## **Bald Brood**

**Causative Agent :** Not always known, however the most common reason is infestation of brood combs by lesser wax moth larvae. It can also be a genetic condition

**Description :** Colonies with Bald Brood may have small patches of live, normal looking pupae in cells that are incompletely capped. The partial capping often has a raised lip that protrudes from the comb.



**Figure 6 : Bald Brood - incomplete capping & raised lip.**

**Further Reading :** <https://secure.fera.defra.gov.uk/beebase/index.cfm?pageid=201>

**Action :** Normally, healthy colonies can suppress infestations of the wax moth. Removal of wax moth larvae, by the beekeeper, may help to reduce the severity of the problem.

## Chalkbrood

**Causative Agent :** *Ascosphaera apis* [a fungus]

**Description :** The larvae dies as a result of ingesting *Ascosphaera apis*.

Initially the dead larvae are covered with a fluffy growth and are swollen to the size of the cell. Later the dead larvae dry into hard, shrunken, chalklike ‘mummies’ which may become grey to black, with the brown vestigial head still in place. Adult bees remove many of the ‘mummies’, which can be seen at the hive entrance.



**Figure 7 : Chalkbrood**

**Further Reading :** <https://secure.fera.defra.gov.uk/beebase/index.cfm?pageId=200>

**Action :** There is no treatment available in Britain. Sterilise the hive and replace brood frames, as the spores may remain in the hive and cause re-infection. Requeen. Some strains of bees are less susceptible.

## Chronic Bee Paralysis Virus

**Causative Agent :** Chronic Bee Paralysis Virus

**Description :** The symptoms of this virus appear only in adult bees and include the loss of body hair, black colouring, trembling, and the inability to fly. Their paralyzed wings are often held at an unusual angle that resembles the letter “K.”



**Figure 8 : Adult bees affected by Chronic Bee Paralysis Virus.**

**Further Reading :** <https://secure.fera.defra.gov.uk/beebase/index.cfm?pageId=275>

**Action :** There is no action that can be taken. This is a virus which may only affect some bees or can sweep through a colony, especially at times of overcrowding or confinement. The colony may succumb or recover.

## **Deformed Wing Virus [DWV]**

**Causative Agent :** Deformed wing virus (DWV) is the main viral disease associated with Varroa mite infestations. Mites feeding on larvae are very effective vectors of DWV.

**Description :** Primarily affecting young bees, it causes distorted, misshapen, twisted, or wrinkled wings.



**Figure 9 : Adult bees infected with Deformed Wing Virus.**

**Further Reading :** <https://secure.fera.defra.gov.uk/beebase/index.cfm?pageld=275>

**Action :** Treat with a varroacide

## Drone Laying Queen

**Cause :** A queen who has been laying normally, and then begins to lay only drone eggs, is likely to be failing because she has run out of sperm due to poor mating.

**Description :** Patchy brood, neglected brood and drone brood in worker cells.



**Figure 10 : Drone brood in worker cells.**

**Action :** Drone laying queens may be removed and replaced with a healthy queen, or unite the colony with a queenright colony.

## Nosema

**Causative Agent :** *Nosema apis* & *Nosema ceranae* [a Microsporidian fungal pathogen]

**Description :** There are no outward symptoms of the disease, although affected colonies can show ‘spring dwindling’, the failure to build up as expected. Dysentery is often associated with *Nosema apis*, but is not caused by the pathogen, but as a result of the infection. This results in the fouling of combs, on top bars or at the hive entrance .



**Figure 11 : *Nosema sp* spores [x 400 magnification]**

**Further Reading :** <https://secure.fera.defra.gov.uk/beebase/index.cfm?pageid=191>

**Action :** There is no medicinal treatment, although Vita claim that their feed additive ‘Vita Gold’ reduces the spore count in bees’ intestines. Instead, beekeepers should maintain their colonies in good health, apply good husbandry practices; such as maintaining strong, well fed and disease tolerant colonies, headed by young and prolific queens.

## Varroa

**Causative Agent :** *Varroa destructor* [a mite]

**Description :** Mite populations can build very quickly. The mite transmits a variety of viruses, which can result in colony collapse. The viruses transmitted include Deformed Wing Virus, Acute Bee Paralysis Virus and Kashmir Bee Virus.



**Figure 12 :** The *Varroa destructor* mite on a bee

**Further Reading :** Managing Varroa – a Fera leaflet available from your Seasonal Bee Inspector.

**Action :** It is essential to keep the varroa mite infestation at a level which can be tolerated by the bees. Most beekeepers monitor mite levels and use a system of Integrated Pest Management.

## Parasitic Mite Syndrome

**Causative Agent :** *Varroa destructor* [a mite]

**Description :** Dead brood in uncapped cells, and brood that has been chewed by the bees in an attempt to remove it from the comb. Dead larvae, but no live larvae can be seen in the accompanying figure, indicating that the bees are unable to rear healthy brood.



**Figure 13 : Parasitic Mite Syndrome**

**Further Reading :** Managing Varroa – a Fera leaflet available from your Seasonal Bee Inspector.

**Action :** To stop the onset of Parasitic Mite Syndrome, it is essential to keep the varroa mite infestation at a level which can be tolerated by the bees. Most beekeepers monitor mite levels and use a system of Integrated Pest Management.

## Sacbrood

**Causative Agent :** Sacbrood virus

**Description :** The diseased larvae fail to pupate and die in cells that have been capped, the cell cappings are often perforated. The larvae dry out from a fluid filled sack with its head up in the cell, to a scale which resembles a 'Chinese Slipper'.



**Figure 14 : Sacbrood - 'Chinese Slipper'**

**Further Reading :** <https://secure.fera.defra.gov.uk/beebase/index.cfm?pageId=199>

**Action :** No treatment is available.