

# HONEY BEE DISEASE ONE STOP SHOP

## The Silent Free Loaders

Constant disease surveillance, early detection and remedial action are the keys to ensuring that your bees remain healthy and productive. It is highly advisable:

- to undertake seasonal checks for brood diseases especially AFB, EFB and chalkbrood
- to trap small hive beetle and never store combs unprotected from wax moth
- to locate hives in sunny protected locations to avoid *Nosema* outbreaks
- to undertake regular requeening with stock that have good housekeeping traits
- to keep good hive records using a note book, the club *Hive Reporting Sheet* or using a smartphone/tablet app such as *Hivekeepers*.

Keeping your buzzers in good nick requires not only routine disease surveillance but prompt remedial action. Here is a step-by-step guide for checking and resolving bee colony disease and pest problems:

- Step 1 Get to know common bee diseases
- Step 2 Learn how to recognise bee diseases as a vet won't help
- Step 3 Inspect your bees, mainly the brood in lower hive boxes
- Step 4 Get a free diagnosis and take immediate remedial action
- Step 5 Adopt good apiary practices to prevent disease spread – simple barriers

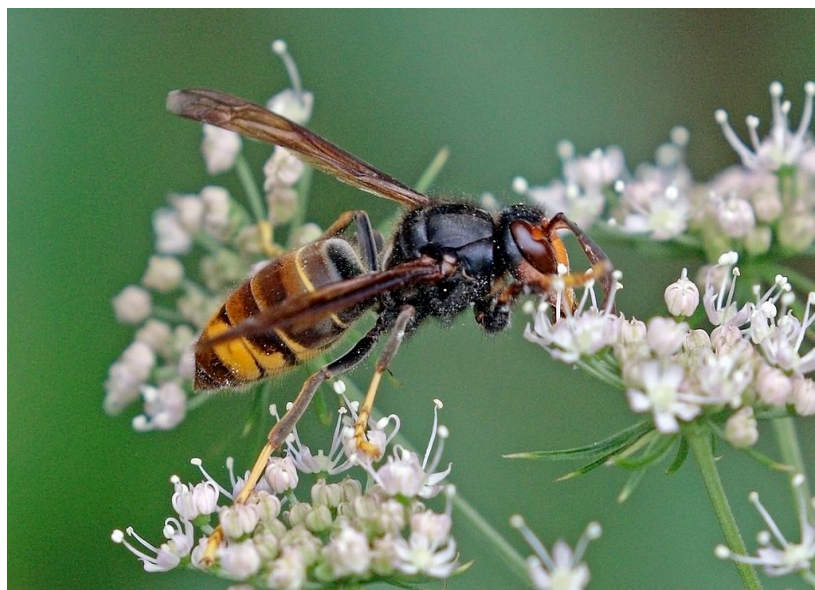
## Step 1 – Get to know honey bee diseases (Box 1 – Honey Bee Enemies)

The common brood diseases are the ones you hear most about: American Foul Brood (AFB), European Foul Brood (EFB), Chalkbrood and Sac Brood Virus (SBV). *Nosema* Disease is an equal scourge but, as an internal parasite, it can't be observed directly. Good management practices such as locating hives in a sunny location will help. Then there are predators and pests and they simply need managing.

### Box 1 – Honey Bee Diseases and Enemies

Disease/predator	Causative agent	Symptoms	Management
American Foul Brood (AFB)	<i>Paenibacillus larvae</i> (a persistent spore forming bacterium)	Sunken, perforated brood cells that string out, may smell sour and adhere firmly to cell wall	Get diagnosis, then destroy bees and irradiate gear before restocking or burn all infected gear
European Foul Brood (EFB)	<i>Mellisococcus plutonius</i> (treatable bacterium)	Discoloured larvae that tend to appear before larvae are sealed. Contents string out and may smell sour	A colony stress disease. Feed light sugar water, requeen and, if needed obtain prescription and feed. Fumigate gear with glacial acetic acid or irradiate
Chalkbrood	<i>Ascosphaera apis</i> (a fungus, not legally treatable)	White to black pellets (mummies) obvious in brood cells and found at hive entrances, on hive floorboards or below screened floor boards	A colony stress disease. Remove or cull heavily infected material. Feed light sugar water to encourage hygienic behaviour and requeen with hygienic strain. Keep brood nest compact to

			avoid brood chilling
Sac Brood (SBV)	<i>Sac Brood Virus</i> (a picoma-like Iflavirus causing only minor colony loss of bees)	Cell contents removed as water white sack	Rarely problematic but likely symptomatic of nutritional and thermal stress
Nosema Disease	<i>Nosema apis</i> <i>Nosema ceranae</i> (microsporidian parasites)	Dwindling bees, excessive numbers of dead bees at hive entrances. <i>Nosema ceranae</i> appears more prevalent in the tropics	A stress disease. Avoid locating colonies in shaded, moist locations, requeen. Microscopic monitoring feasible but needs some skill
Greater and Lesser Wax Moth	<i>Galleria mellonella</i> and <i>Achroia grisella</i>	Webbed or collapsed combs, occasionally white zigzag track on sealed brood, pupal cases embedded in frames and supers	Freeze or fumigate all combs removed from hives and seal securely before storage. Avoid excessive storage space in hives and maintain strong colonies
Small Hive Beetle	<i>Aethina tumida</i>	Large pinhead sized beetles that scurry; larvae small white slime forming grubs	Employ safe Apithor harbourage or oil/diatomaceous earth traps
Birds	Currawongs, wattle birds, bee eaters	Easily observed	Only a significant problem for queen breeders
Insects: European wasps, meat ants and prospectively Asian Hornet	<i>Vespula germanica</i> , <i>Iridomyrmex purpureus</i> ; <i>Vespa velutina</i>	Rarely a significant problem for strong colonies	Use wasp traps and avoid placing hives near ant nests
Arachnids: Spiders and mites		Red backs feed on dead and weak bees, <i>Varroa</i> and associated viruses absent in Australia	Sample and report suspicious incursions at Exotic Plant Pest Hotline (1800 084 881)



**A future invader? - The Asian Hornet, *Vespa velutina*** Source:

[https://en.wikipedia.org/wiki/Asian\\_hornet#/media/File:Asian\\_hornet\\_\(Vespa\\_velutina\).jpg](https://en.wikipedia.org/wiki/Asian_hornet#/media/File:Asian_hornet_(Vespa_velutina).jpg)  
*Brood diseases*

## Step 2 - Learn to recognise common diseases

### *AFB and other brood diseases*

AFB and EFB are such serious diseases that the ACT and NSW governments will cover the cost of diagnosis, but you must be a registered beekeeper.

The common brood diseases are the ones you hear most about: are American Foul Brood (AFB), European Foul Brood (EFB), Chalkbrood and Sac Brood Virus (SBV).



**Brood diseases – Clockwise: AFB, EFB, Chalkbrood, SBV.**

**Photos:** Alan Wade, Beekeepers Association of the ACT and Rob Snyder, [www.beeinformed.org](http://www.beeinformed.org)

### *Nosema*

This is very serious disease of adult bees but requires microscopic surveillance to assess whether infection is rampant. Both types of *Nosema* cause serious losses with a number of subtle symptoms, notably colony dwindling occasioned high adult bee mortality and starvation.

### *Greater and Lesser Wax Moths and Small Hive Beetle*

These hive marauders will attack weak colonies and stored gear at the drop of a hat. Freeze combs overnight or fumigate them before storing them in a airtight container and deploy small hive beetle traps.

Check out websites in Box 2 for really authoritative information.

### Box 2 – Honey Bee Disease and Pest essential readings

Problem Agent	Sample websites
American Foul Brood (AFB)	<a href="http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0003/66216/American-foulbrood.pdf">www.dpi.nsw.gov.au/__data/assets/pdf_file/0003/66216/American-foulbrood.pdf</a>
European Foul Brood	<a href="https://www.dpi.nsw.gov.au/__data/assets/.../European-foulbrood-and-its-control.pdf">https://www.dpi.nsw.gov.au/__data/assets/.../European-foulbrood-and-its-control.pdf</a>
Chalkbrood	<a href="http://www.planthealthaustralia.com.au/wp-content/uploads/2016/02/Chalkbrood-disease-FS.pdf">www.planthealthaustralia.com.au/wp-content/uploads/2016/02/Chalkbrood-disease-FS.pdf</a>
Sac Brood Virus	<a href="http://www.agric.wa.gov.au/bees/sacbrood-disease-bees">www.agric.wa.gov.au/bees/sacbrood-disease-bees</a>
Wax Moths	<a href="http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0010/176284/wax-moth.pdf">www.dpi.nsw.gov.au/__data/assets/pdf_file/0010/176284/wax-moth.pdf</a>
Small Hive Beetle	<a href="http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0010/220240/small-hive-beetle-management-options.pdf">www.dpi.nsw.gov.au/__data/assets/pdf_file/0010/220240/small-hive-beetle-management-options.pdf</a>
Nosema Disease	<a href="http://www.dpi.nsw.gov.au/__data/assets/pdf_file/0003/177519/nosema-disease.pdf">www.dpi.nsw.gov.au/__data/assets/pdf_file/0003/177519/nosema-disease.pdf</a>
European Wasp	<a href="http://www.dpi.nsw.gov.au/__data/assets/pdf.../primefact-1370-european-wasp.pdf">www.dpi.nsw.gov.au/__data/assets/pdf.../primefact-1370-european-wasp.pdf</a>



#### *Wax moth damage (left) and Small Hive Beetle damage (right)*

**Photos:** <http://agriculture.vic.gov.au/agriculture/pests-diseases-and-weeds/pest-insects-and-mites/wax-moth-a-pest-of-combs-and-honey-bee-products>

<https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/land-management/health-pests-weeds-diseases/pests/invasive-animals/other/small-hive-beetle>

### Step 4 – Submitting a Sample and Handling Infected Gear

Taking a sample is quite easy once you've got down to brood frames in the lower part of the hive. Simply shake or brush off bees using a little smoke, look carefully at all brood and poke it with a sturdy twig or matchstick. For AFB and EFB testing simply smear contents on a standard specimen slide and follow Box 3 directions and take immediate remedial action to resolve problems. Like Anthrax in animals the problem will never go away unless you take decisive action is the diagnosis indicates your bees have AFB.

### Box 3 – Disease Diagnosis and Recovery of Infected Gear

Steps A-Z	Information	Notes
Take a sample	<a href="http://www.dpi.nsw.gov.au/__data/asset/s/pdf_file/0008/117089/samples-for-bee-disease-diagnosis.pdf">www.dpi.nsw.gov.au/__data/asset/s/pdf_file/0008/117089/samples-for-bee-disease-diagnosis.pdf</a>	Follow sampling guide
Complete veterinary specimen advice form	<a href="https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0007/680425/Vet-specimen-advice-form-Feb2018.pdf">https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0007/680425/Vet-specimen-advice-form-Feb2018.pdf</a>	Include your apiary registration number, address, email address and check Bee Disease Investigation options
In ACT: Forward sample and completed form to Kyeelee Driver, ACT Government Stromlo Offices, Cotter Road, WESTON ACT	Dr Kyeelee Driver: Biosecurity Veterinary Officer kyeelee.driver@act.gov.au +61 437 918 935 Jenny Conolly: Pest and Weeds Officer jenny.connolly@act.gov.au	Include your ACT or NSW apiary registration number for free diagnosis.
In NSW: Forward sample and completed form to NSW DPI	NSW DPI Regional Veterinary Laboratories Elizabeth Macarthur Agricultural Institute PMB 4008 NARELLAN NSW 2567	Include your NSW registration number for free diagnosis
Complete Steritech submission form and follow hive wrapping instructions	<a href="http://steritech.com.au/wp-content/uploads/2017/09/AFB-Awarenewss-New-Pricelist-F18-AFB-Promotion.pdf">steritech.com.au/wp-content/uploads/2017/09/AFB-Awarenewss-New-Pricelist-F18-AFB-Promotion.pdf</a>	Clearly label all irradiation gear with Steritech address 5 Widemere Road, WETHERILL PARK NSW 2164 and your return address and mobile phone number
Engage premium bee club hive irradiation collection and delivery service and provide payment and include completed Steritech form	Check with Peter McKeahanie for box collection and payment petermckeahnie@hotmail.com +61 418 625 923	Cost is \$21 per single box; \$26 non members: no honey in frames, single boxes only. Easy pack boxes are available from the club or direct from Steritech

### Step 6 – Adopt an Apiary Barrier

Chalkbrood and Sac Brood Virus (and in future *Varroa* and maybe *Tropilaelaps* mites and their serious virus passengers) will come to you. However there's an especially good case to prevent AFB and EFB coming into your apiary with infected bees or contaminated gear.

Adopt a simple barrier system especially to reduce the chance of your bees contracting these very serious bee diseases. If you buy or inherit bee gear get it irradiated and factor that into the purchase price. And if you buy bees get an experienced beekeeper to give you a hand to check them out for disease and general condition.

Check the club website policies: *Jerrabomberra Wetlands Apiary (JWA) Disease Barrier System* to avoid falling into the trap of bringing diseases home to your backyard bees and not spreading diseases from hive to hive. Also check out our simple *Colony Reporting Sheet* on the club website.