

Small hive beetle

ESTABLISHED PEST

What is small hive beetle?

Small hive beetle (SHB) (*Aethina tumida*) is a small brown-black beetle with clubbed antennae that originated from sub-Saharan Africa. It has been in Australia since 2002, and has caused a major impact to honey bee colonies throughout the warm and humid coastal strip between VIC and North QLD. It has also been detected in all states and territories of Australia, except NT and southern parts of WA. The SHB life cycle can take between 3–12 weeks and has four stages: egg, larva, pupa, and adult beetle.

SHB life cycle

Egg

Female SHBs can lay 1,000 eggs in their lifetime with upper limits of 2,000 recorded in research studies. The female will lay the clusters of pearly white 10–30 eggs within capped brood cells or in the small cracks and crevices around the hive. The number of eggs that will hatch depends primarily on the relative humidity, with some evidence suggesting at 30°C, no eggs will hatch at or below 34% relative humidity. It takes approximately 1–6 days for larvae to emerge from the eggs, though most hatch within three days within a hive.

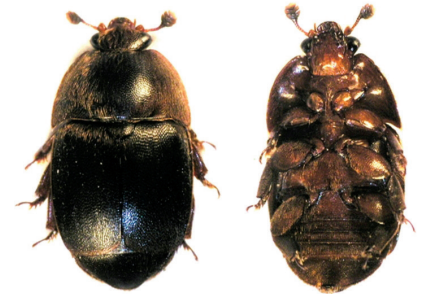
Larvae

SHB larvae causes the majority of damage to active hives by burrowing into combs, eating brood, honey and pollen. SHB is attracted to active hives because of the availability of food. Whilst feeding, the larvae can carry a yeast (*Kodamaea ohmeri*) which contaminates the honey causing it to ferment. Heavy infestations cause the hive to become 'slimed out' and may cause the colony to die or abscond.

Pupation

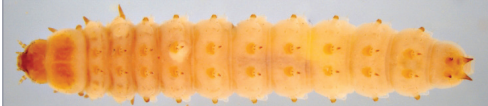
Larvae will burrow 5–20cm into the soil and construct a smooth-walled pupation chamber. Moist soil and warm temperatures are critical for successful pupation and the emergence of the adult beetle.

Pupation can take between 2–12 weeks depending on these environmental factors. During cold periods of less than 10°C pupation can take up to 100 days. Pupae are initially creamy-white and then change to chestnut brown or black as they develop into an adult beetle. Once the adult beetles emerge from the soil they fly in search of new honey bee colonies to infest.



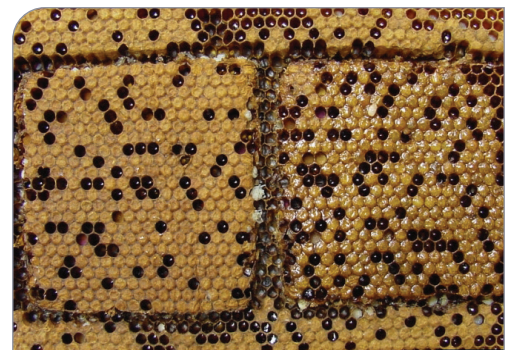
Adult SHB are brown-black with clubbed antennae

Source: James D Ellis, University of Florida



Larvae of SHB are pearly white and about 10 mm long

Source: Ken Walker Museum Victoria, PADIL



Cells infested with SHB (right) show a slimy appearance when compared to healthy unaffected cells (left)

Source: Kieth Delaplane, University of Georgia

Small hive beetle

Adult beetle

Adult SHBs are able to fly up to 15km to locate a honey bee colony to infest. Adult beetles prefer weak hives in spring and summer, but strong hives in autumn where the higher honey bee numbers keep them warm. It is believed that the SHB adults find the hives by detecting the odour of adult bees and hive products (honey and pollen).

Adult beetles are 5-7mm long and 3-4.5mm wide and females tend to be longer and heavier than males on average and occur in greater proportions in the population. The adult beetles have clubbed antennae and are initially a yellowish or reddish brown that changes to brown or black. Adult beetles can survive up to 6 months feeding on honey and up to 50 days feeding on an old empty brood comb.

What should beekeepers look for?

Beekeepers should look for the adult SHB in the darker parts of the hive. Adult SHB avoid light and will seek refuge quickly when the hive is inspected. Inspect underneath the hive lid, as well as the brood box, and in the debris found on the bottom board. Weak and stressed colonies with a low bee-to-comb ratio are considered the most susceptible. Pupae may also be found by sifting the soil around the bee colony.

SHB is a reportable pest in these jurisdictions. If you detect SHB you should contact your local department of agriculture immediately.

What can it be confused with?

SHB larvae look similar to wax moth larvae. To distinguish between the two pests, SHB cause the honey to ferment and the hive to become 'slimed out', while wax moth larvae leave behind webbing mass and tough white cocoons on frames.

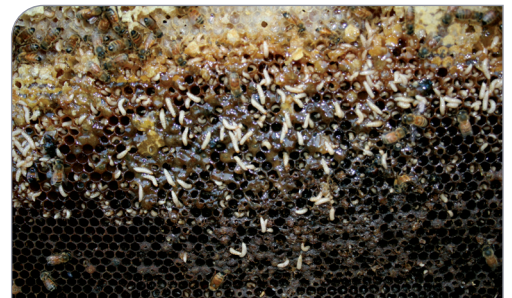
How does it spread?

SHB's are strong flyers and can travel up to 15km to find a new hive and colony. SHB are attracted to new hives and colonies by the odour the colony produces. Feral honey bee populations have also assisted the SHB to become established in areas with suitable climatic conditions.



Adult SHB are about 2-3 times smaller than honey bees

Source: Jessica Lawrence, Eurofins Agrosience Services



Heavy infestation of larvae on comb produces a slimy appearance

Source: Nick Annand, NSW DPI

For more information about SHB, go to www.beeaware.org.au/small-hive-beetle.

The BeeAware website contains extensive information on SHB, including:

- Life cycle
- Appearance
- Detection methods
- Spread and distribution
- Similar pests
- Management options
- Additional fact sheets and videos

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One of the main mechanisms for spread is through the movement of hives and hive products between infested areas and non-infested areas. This includes beekeeper assisted movement of colonies of honey bees, or through the transportation of infested hive products including honey comb, bee collected pollen, slum-gum, beeswax cappings and scraps which have not been melted down.

SHB is also a pest of stored combs and supers, and can also be easily spread through the movement of stored combs and supers which are believed to be clean.

Where is it now?

SHB is present throughout NSW, Qld, Vic, ACT and in parts of SA and WA. It has recently been detected in TAS but has not been recorded in NT. It is a reportable pest in these jurisdictions where it is currently not present, or where it only has a very restricted distribution. If you detect SHB you should contact your local department of agriculture immediately.

How can beekeepers protect their hives from SHB?

It is critical to maintain strong, healthy colonies with a young productive queen bee and a high bee-to-comb ratio. Beekeepers should maintain good hygiene practices in the hive (e.g. remove debris on bottom boards, remove burr comb etc.) to reduce areas where SHB can hide and breed.

It is also important to maintain good hygiene practices around the apiary (e.g. remove beeswax scraps, old combs and dead colonies etc.) which can attract SHB. Cool rooms maintained at 10°C or less for excess supers and combs will prevent the adult SHB laying eggs and will minimise SHB larvae activity. Freezing frames and hive parts at -7°C will kill all life stages of SHB within 4-5 hours. A range of in-hive chemical and nonchemical options are also available to beekeepers.

Please Note: The SHB larvae carry the *Kodamaea ohmeri* yeast that poses a threat to immuno-compromised people. Be aware of the risk of handling and cleaning SHB slimed honey bee equipment and take precautions.

If you see anything unusual, call the
Exotic Plant Pest Hotline.

EXOTIC PLANT PEST HOTLINE
1800 084 881