Honeybee Pests & Diseases – Small Hive Beetle

The Small Hive Beetle (SHB) *Aethina tumida* is native to Africa, and until recently was thought to be restricted to that region. It is a minor pest of weak honeybee colonies and stored honey supers in its homeland where native African bees have natural defences. However, the SHB was confirmed for the first time outside Africa in Florida, USA, in May 1998, and since then has become widespread across the USA and more recently in Australia in October 2002. Of more concern is the fact that in October 2004 SHB larvae were identified in an unauthorised consignment of queen bees imported into Portugal (again from Texas, USA). SHB can survive the colder climates and therefore it is highly likely that the beetle would survive and establish itself under UK conditions. In view of its destructive nature it is a major threat to UK beekeeping, agriculture and the environment through disruption of the pollination services of honeybees.

As yet it has not been found in the UK although there is a serious risk of SHB importation through honeybee queen packages, swarms or feral colonies on freight, second-hand beekeeping equipment, imported fruit, and in soil material. Any suspected incidence should be reported without delay.

Note: This is a notifiable disease. *Any suspected incidence of SHB must be reported without delay to your local Bee Inspector. Inform your local beekeeping association / community to alert them of its presence.*

Recognition

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Adult form of Small Hive Beetle. Distinctive club shaped antennae.

Aethina tumida is an oval shaped dark brown or black coloured beetle 5-7mm long and 3-4.5mm wide with club shaped antennae. Their bodies are broad and flattish and covered with fine hairs. There can be variations in size but are generally a third the size of a worker bee. SHB belongs to a family of scavenger beetles known as *Nitidulidae*, pests of fruit and stored food and have a close association with the social bees, wasps and ants. Due to their size they are fairly conspicuous in the hive and on combs.

Effects on Apis mellifera colonies Colonies infested with SHB (*Aethina tumida*) will show clearly visible signs of their presence in the hive. Their ability to reproduce rapidly and in great numbers results in massive brood mortality, comb and cappings destroyed through tunnelling, and stored honey eaten and ruined by larvae feces. Colonies infected with SHB will ultimately be destroyed at an alarming rate, and any remaining bees caused to abscond.

Life Cycle - SHB adults can locate colonies at long distances and once inside lay large numbers of eggs (two - thirds the size of bee eggs) in crevices and on combs within the hive. SHB are also known to lay eggs in fruit. Laying adults (capable of laying 1000 eggs in its 4 - 6 month lifespan) often lay masses of eggs at the same time potentially producing tens of thousands of offspring. The eggs will hatch 2 - 6 days later with up to 30 SHB larvae occupying a single comb cell, at which time both SHB larvae and adults will eat honeybee eggs, brood,

pollen and honey. The 'maggot - like' larvae reach maturity at 10 - 14 days and measure 11mm. They should not be mistaken with wax moth larvae due to the spines on the dorsum and 3 prolegs near the head, and the absence of webbing or frass associated with moth infestation. The larvae often clump together in comb cells and in the corners of frames. The mature larvae mass together in the bottom of the hive then crawl out of hive at night to begin pupation which normally takes place in soil outside hive.

SHB larvae show a distinct preference for warm sandy soils for this purpose. It takes around 3 - 4 weeks for the adult SHB to hatch out and emerge from the pupation, completing the life cycle. At this point they are a reddish - brown colour, which later darkens to brown / almost black. The newly emerged adults will start to disperse in search of new colonies in which to lay their eggs after about a week. SHB adults can fly at least 5 miles to infest new colonies and are thought to be able to disperse rapidly over distances of 5 - 10 miles. It is known that adults can survive up to two weeks without food or water, 50 days on used honeycomb, and several months on fruit.

Detection

Hive Examination - Due to the conspicuous nature of the Small Hive Beetle, examination of hive parts especially frames and combs will reveal their presence. When SHB is present adult beetles can be seen crawling over comb surfaces and grubs within or on comb cells feeding on honeybee larvae and honey stores.

Monitoring - As with all honeybee related diseases vigilance is important. The Central Science Laboratory National Bee Unit (CSL NBU) identifies certain 'At Risk' situations where extra vigilance is necessary:

- Warmer parts of the country i.e. southern and coastal areas.
- Colonies within short distances of up to 10 miles from sea and air ports (civilian and military).
- Areas with sandy soils suitable for SHB development.
- Colonies within close distance of freight depots where goods such as foodstuffs are imported.
- Proximity to apiaries containing bees imported from areas known to have SHB present

Treatment

Apis mellifera has no natural defences against the SHB. They are a minor pest in their native country due to natural defences but pose a major threat to Apis Mellifera in Europe and the UK. Infestations are extremely destructive and will spread quickly. Any suspected incidence of this pest should be reported without delay. Apis mellifera has no natural defences against the Small Hive Beetle which feed on larvae and honey stores. They are prolific breeders rapidly weakening and overcoming colonies, and may spread other harmful pathogens throughout the colonies. Left untreated, colonies of bees will eventually die. Please obtain an up to date copy of the EURL SHB leaflet by visiting BeeBase.

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Vectors

Aethina tumida, unlike *Varroa destructor* and *Tropilaelaps clareae* & *T. koeningerum*, is a wing born pest, and can travel under its own power covering great distances. Once established in an area it will be difficult to remove.

- Direct Importation - Importing with honey bees, especially package bees (e.g. queen plus 10.000 workers, in sealed and screened container) and complete colonies.
- Swarming - Importation of swarms from infested colonies (feral or otherwise) inadvertently carried on container or airfreight.
- Imported Goods - Importing used beekeeping equipment, comb and beeswax.
- Beekeepers - Careless manipulative management by the beekeeper can transfer eggs, larvae and beetles to other colonies in the apiary and to other apiaries.
- Migratory Beekeeping - Moving colonies around the countryside to exploit nectar flows such as heather moors and seasonal OSR has great potential to rapidly spread all diseases.
- Soil Material - Importing soil material (e.g. in plants or on heavy machinery) containing SHB larvae / pupae.
- Food Imports - Imported goods such as fruit.

Note: beekeepers are the principal and most rapid means of spreading brood pests and diseases. Movement of infested colonies is the principal and most rapid means of spreading Small Hive Beetle.