

Small Hive Beetle

Latin name: *Aethina tumida* (Murray)

Common name: The Small hive beetle
Often abbreviated to "SHB"

The SHB was detected in South West Italy in September 2014. Its occurrence is limited to an area in North West Calabria region and one single apiary outbreak in Sicily (last data February 2015). Up to date information on the current distribution are available on the Italian National Reference Laboratory website¹ and European Union Reference Laboratory website².

The SHB is a statutory notifiable pest in the European Union. There is a legal requirement for any SHB confirmation. There is therefore a legal requirement on beekeepers to notify any suspect findings. Following introduction in Italy, **protective measures** have been implemented³. The **dispatch** of honey bees, bumblebees, unprocessed apiculture by-products, beekeeping equipment and comb honey intended for human consumption is **prohibited** from the infested regions. **EU legislation** prohibits (with the exception of New Zealand) the importation of package bees or colonies from Third Countries. It is permitted to import honey bee queens from a very limited number of countries outside the EU⁴. **The import regulations and protective measures** are the main defence against the introduction and the spread of the SHB in Europe. It is therefore crucial that every beekeeper respects the **EU legislation** and regularly inspects their colonies for the presence of SHB (see below).

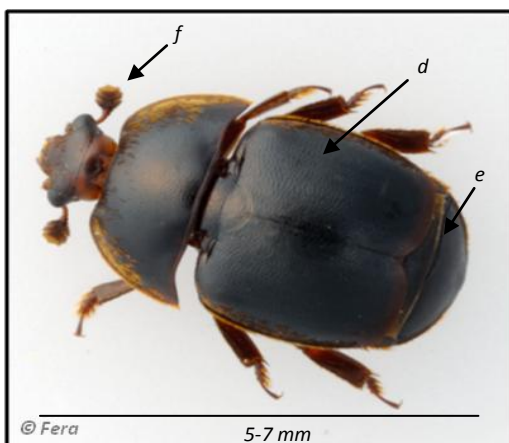
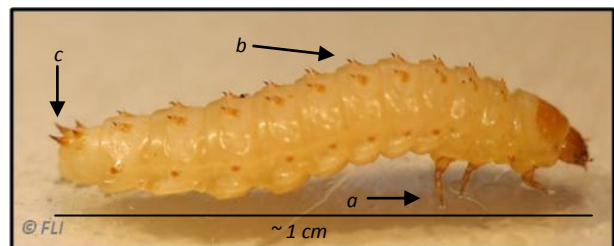
Damage in colonies: The beetle can multiply to huge numbers within infested colonies where it eats brood, honey and pollen. In certain conditions, the SHB destroys combs and causes comb damage and honey spoilage through feeding and defecation. If beetle infestations are very high and uncontrolled, they ultimately destroy colonies or cause them to abscond.

National Beekeeper registration systems: It is extremely important that **all beekeepers register on their national database**. If locations of apiaries and colonies at risk of SHB infestation are not known, then the chances of detecting its early arrival, achieving eradication, or even managing long term control in the event of an introduction are all seriously jeopardised.

How to recognize *Aethina tumida*

- **The larva**

The larva is the harmful stage to the colony when it occurs in the hive. It grows to about 1 cm long, is creamy-white and may at first glance look like the wax moth larva (*Galleria mellonella*). However, on closer examination it can easily be distinguished due to the presence of 3 pairs of long forelegs (a), spines on the dorsal side of each body segment (b) and two large spines protruding from the rear (c).



- **The adult**

The adults are 5-7 mm long and 2.5-3.5 mm wide (one-third of the size of a worker bee). Light-coloured upon emergence from the pupa, the beetle darkens to become brown to black. The head, thorax and abdomen are well separated. A key feature of this beetle is that its wing cases (elytra - d) are smaller than the abdomen, so the end of the abdomen is exposed (e). It also has distinctive "club-shaped" antennae (f).

¹ <http://www.izsvenezie.it>

² <https://sites.anses.fr/en/minisite/abeilles/eurl-bee-health-home>

³ Commission Implementing Decision 2014/909/EU of 12 December 2014

⁴ Council Directive 92/65/EEC of 13 July 1992 and Commission Regulation (EC) No 206/2010 of 12 March 2010

Biological cycle

A. tumida can have several generations per year (1-6) depending on the environmental conditions.

The fertilized female lays eggs (1.5 x 0.25 mm) in clusters e. g. in wood crevices in the hive, or directly into the bees' brood cells (g – capping has been removed). Females can lay one- to two-thousand of eggs in the hive during their lifetime.

The larval stage lasts 10-16 days. Larvae are omnivorous and eat brood, pollen and honey.

Mature larvae pupate after 15-60 days. Pupation occurs in soil outside the hive, usually at a depth of 1 cm to 30 cm and within 20 m of the hive. In rare instances larvae will crawl 200 m to find suitable soil. Soft and moist soils and a temperature above 10°C are necessary for completion of the life cycle, although SHB may be able to survive short periods at lower soil temperatures (< 3 weeks).

Adult beetles usually emerge after 3-4 weeks but can emerge anytime between 8 and 84 days depending on temperature. Adults can fly at least 10 km to infest new colonies. Adult beetles can survive for up to 9 days without food or water, 50 days on used comb and several months on ripe, decaying or rotten fruit.

Methods of spread. The spread occurs naturally as SHB is a good flyer. Spread is enhanced by movement of package bees, honey bee colonies, honey bee swarms, honeycomb, beeswax or beekeeping equipment. Movement of soil, fruits, and alternative hosts (e.g. bumble bees) may also be routes for introduction.



Suspicion criteria/ Infestation consequences for the colony

Clinical signs of infestation by the Small hive beetle:

- Galleries inside the frames (larvae dig tunnels through comb)
- Brood destruction (eaten by SHB larvae)
- Modification of the honey colour and honey fermentation

How to check your hives

Note that it is very difficult to detect low numbers of SHB, larvae or eggs in hives, so regular inspection of colonies in apiaries is essential for early detection. Several traps exist, allowing the detection of the beetle.

One easy-to-use trap is made of 4 mm corrugated plastic and placed through the entrance at the bottom of the hive (h). Adults of *A. tumida* will hide from the bees inside the tunnels of the corrugated plastic.



If you do not have traps available, you can physically check your hive and look for two signs:

1. Sometimes it is possible to see adult beetles running around.
2. In the worst cases (i. e. when infestation is very heavy) you will see fermented, smelly honey running out of the hive entrance or dark, crusty traces on the outside of the hives from the crawling wandering larvae.

It is crucial to detect atypical beetles as early as possible.

What to do in case of suspicion?

Immediately alert the competent authority, who will implement protective measures and movement restrictions.

All suspect *Aethina tumida* adults, larvae or eggs should immediately be sent to the national reference laboratory and / or competent authority **for identification**. Use a sealed container. Please provide as many details as possible - your name and address, the apiary name and location. **Do not send live beetles, larvae or eggs in the post.** Kill them first by keeping them in a freezer overnight or by putting them in 70% ethanol.