

The Small hive beetle *Aethina tumida* (SHB)

What is the Small hive beetle (SHB)?

The SHB is a statutory notifiable pest of honey bee colonies across Europe. This beetle, which is indigenous to Africa has spread to the United States of America, Australia, Canada, Jamaica, Mexico and Cuba, where it has proved that it can be a very serious pest of European honey bees. There is a serious risk of its accidental introduction into the UK. On September 11 2014, the Italian National Reference Centre for beekeeping confirmed the first detection of the presence of Small hive beetle (SHB) in South West Italy, in the port city of Gioia Tauro. The samples were taken from a bait trap (similar to the Sentinel Apiaries in the UK) belonging to the University of Gioia Tauro.

Could it reach the UK?

Yes, it could. Although indigenous to Africa, it has spread to a number of countries around the world. There is a significant risk that the Small hive beetle could be transported and introduced into the UK. The detection of the small hive beetle in Italy reemphasises these risks. A pest risk analysis completed in March 2010 identified the following pathways through which the beetle could be carried:

- Movement of honey bees: queens and package bees (workers) for the purposes of trade.
- Movement of alternative hosts e.g. bumble bees for pollination purposes.
- Trade in hive products – e.g. raw beeswax and honey in drums.
- Soil or compost associated with the plant trade.
- Fruit imports – in particular avocado, bananas, grapes, grapefruit, kei apples, mango, melons and pineapples – Small hive beetle may oviposit (lay eggs) on fruit.
- Movement on beekeeping clothing / equipment.
- Movement on freight containers and transport vehicles themselves.
- Natural spread of the pest itself by flight, on its own or possibly in association with a host swarm.

The UK has not permitted the import of colonies of bees or package bees from Third Countries (outside the EU) for many years. EU legislation now prohibits (with the exception of New Zealand) imports of package bees or colonies from Third Countries.

Could the SHB survive in the UK?

Yes it could. The Small hive beetle is well able to survive even in the colder climates of North America, such as Minnesota and Wisconsin. It has also reached Canada. Studies in the USA show that the adult beetle can survive during winter within the winter clusters inside honey bee colonies and can therefore survive in any location where bees exist.

Could SHB be eradicated?

Probably not. Unless the Small hive beetle is detected very soon after its arrival, it will rapidly spread into the surrounding honey bee population, making eradication very difficult. A major limiting factor to eradication would be the unknown distribution of managed bee hives and the potential for populations of the beetle to survive in wild hosts (e.g. feral bees and bumble bees)

How do we keep an eye out for SHB?

Beekeeper vigilance must now be heightened following the recent confirmed spread into a number of new countries outside its native area on top of the USA and Australia: Canada, Hawaii, Mexico, Jamaica and Cuba, and now Italy. Keeping an eye out for the beetle must be a routine part of colony management in the UK. In addition to apiary inspections for statutory bee diseases, the NBU provides advice and assistance to beekeepers on a range of bee health topics and good husbandry, and runs training courses for beekeepers on disease recognition and control, usually in conjunction with local Beekeeping Associations. These include how to look for and recognise the Small hive beetle. The confirmation of SHB in Italy only serves to re-emphasise this importance of beekeeper vigilance.

The NBU has a risk based Apiary inspections programme for exotic pests such as the SHB. Although the Small hive beetle is not thought to be present in the UK, since 2003, the NBU and its Inspectors have increased statutory surveillance programmes to monitor for exotic pests including Small hive beetle (and *Tropilaelaps* mites). These exotic pest surveillance (EPS) inspections represent 10% of the annual statutory programme (please see the *Tropilaelaps* advisory leaflet for more details, or the NBU's BeeBase website www.nationalbeeunit.com . Following the confirmation of SHB in Italy, the NBU Inspectors are making further visits to beekeepers who have recently imported honeybees from Italy. The recent Defra policy review [Improving honey bee health Proposed changes to managing and controlling pests and diseases](#) placed renewed emphasis on increased surveillance for exotic threats to the UK, which could have a very serious impact on the honeybees industry and their ability to provided pollination services for agriculture.

How can we manage it should it arrive?

Experience from countries where the beetle is present has shown that the best line of defence is good management or Integrated Pest Management (IPM), which begins with maintaining strong colonies. As with many pests, strong healthy colonies can exert considerable control over this beetle. Weak colonies, supers or chambers empty of honey bees are all prime targets for rapid infestation. There are a number of techniques that can reduce the impact of the beetle that could be adopted and applied here in the event of its arrival into the UK.

These include:

- Good bee husbandry, good hygiene practices and apiary management;
- Changes to extraction and honey handling procedures to limit delays;
- Use of pesticides to kill beetles in the hive and surrounding soil.
- Look for and select bees that seem to have lower beetle populations. There is likely to be genetic variation in the ability of colonies to resist beetle infestation

What are the Harmful effects of the Small hive beetle?

Small hive beetle larvae do the most damage in the colony, burrowing through brood combs and consuming the brood and stores. The level of harm to the colony depends on the number of beetle larvae present. Once present in large numbers, the very survival of the colony is at great risk. Queens stop laying and colonies can quickly collapse. In heavy infestations, tens of thousands of Small hive beetle larvae may be present in a single hive. In such cases there can often be up to 30 larvae per cell. Such large numbers can generate enough heat inside the hive to cause combs to collapse and, subsequently, for the colony to abscond. Defecation of adult beetles and larvae in honeycomb causes the honey to ferment and drip out of cells. Affected combs become slimy and have a characteristic odour reminiscent of 'rotten oranges'. These combs are repellent to bees and can also cause absconding.

What should we be doing now?

Despite our wishes and efforts to the contrary, sooner or later the Small hive beetle could arrive in the UK. It is important that beekeepers prepare for this possibility. Some advice targeted at what beekeepers should do now is illustrated below.

- Make sure your details are recorded on BeeBase. It is extremely important that all beekeepers register on BeeBase. If we don't know where 'at risk' colonies are located, then our chances of effectively monitoring for the arrival of the Small hive beetle, or achieving control in the event of an invasion are seriously jeopardised. This is the responsibility of the beekeeper. To register as a beekeeper, please visit www.nationalbeeunit.com.
- Make sure you only import bees through the proper channels and with appropriate health certification. Do NOT be tempted to import bees illegally.
- Make sure you understand the essential details of the Small hive beetle's lifecycle, and how to recognise larvae and adult beetles
- Be vigilant-you should keep an eye out for the Small hive beetle when you examine your bees – this should be part of routine colony management. If the beetle does enter the UK, early detection will allow control action to be targeted promptly where it is most needed and help reduce the spread of this pest throughout the country.
- Aim to stay informed and up to date on the spread and emerging biology of the Small hive beetle and the methods used to control it overseas. If it does enter the UK, you will need to be ready to start to deal with it. There is a great deal of new information on the Small hive beetle. The NBU provides regular updates to beekeepers as part of its bee health advisory work. To find more information please see the advisory leaflet '[Small hive beetle](#)'.

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