Contingency Planning at the National Bee Unit

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Recently, the wider aspects of contingency planning have been brought into the limelight with the Covid-19 pandemic. This has shown that with an already home-based inspectorate, a management team that is largely home based, and with teamwork and determination, work can continue and, overall, the numbers of apiary inspections have not decreased.

Many improvements in communications and technology have been brought in across the Department for Environment, Food and Rural Affairs (Defra) and its agencies in the past few years and these have certainly showed their value during the pandemic. These include the use of iPads for entering inspection reports remotely in the field and Microsoft Teams for remote meetings and presentations.

Last year, the contingency planning side of the National Bee Unit (NBU) was involved in several internal audits and wider agency restructuring projects which have helped to improve our response, as well as bring us a better understanding of the capabilities of the wider Animal and Plant Health Agency (APHA) and routes to obtaining support during major outbreaks.

Pest-specific risk analysis and contingency plans have been prepared for: Asian hornet, small hive beetle (SHB) and *Tropilaelaps* mites. Although these do need refreshing and bringing up to date, the fundamental risk analyses still stand true.

Work on contingency planning and preparations is relatively unseen and continues in the background. This article will give an insight into some of the improvements and changes that have occurred in recent years.

Asian hornet

The key focus with Asian hornet is a flexible and proportionate response with continuous improvement at the fore. After every incursion, we review lessons learned and these are acted upon over the subsequent year, leading to an improved and more efficient response year-on-year. Additionally, the science and knowledge of this pest is expanding rapidly and change is continual, meaning that updates to our operational procedures and contingency plans are now made on an annual basis.

On the awareness side, Fera Science Limited has done presentations on the biology and genetics of Asian hornet and the NBU has published tables of the confirmed sightings and nest destructions, both of which are available from the NBU's Asian hornet page on BeeBase: www.nationalbeeunit.com/index.cfm?sectionid=117

The British Beekeepers' Association (BBKA) and Welsh Beekeepers' Association (WBKA) have set up networks of Asian hornet teams through their associations that help with following up local leads and assist the NBU with

Two views of Vespa velutina foraging on ivy, Dungeness, Kent

Preparing a small hive beetle tray trap

wider surveillance during an Asian hornet response.

This past winter, a lot of focus has gone into developing a track and trace app for use by the inspectorate. This has been developed for the NBU by geographic information system (GIS) specialists within APHA's national wildlife management centre and Fera Science Limited and will allow inspectors to use the Arc GIS mapping system to enter data in the field which is available to their colleagues and management in real time, thereby speeding up reporting and allowing the mapping of trap and bait station placement, along with line of sight information, to be instantaneous.

Inspectors have been brought up to date with contingency response changes and have received training on the track and trace app. Further training in the field will occur as the season progresses to ensure all the NBU regional teams are comfortable with track and trace procedures for Asian hornet.

Small Hive Beetle and *Tropilaelaps*

Small hive beetle (SHB) and *Tropilaelaps* are both covered by the same contingency plan, as they are both pests within the hive and the response will be similar in many ways. A video on SHB biology has been created by Fera Science Limited and will shortly be available from the NBU's SHB page: www.nationalbeeunit.com/index.cfm?pageid=125 Research into soil treatments continues and Fera Science Limited will be publishing papers on this shortly.

For both these exotic pests, the major pathway for international movement is movement of bees. Over recent years, the numbers of imports have steadily increased as shown in the chart below.

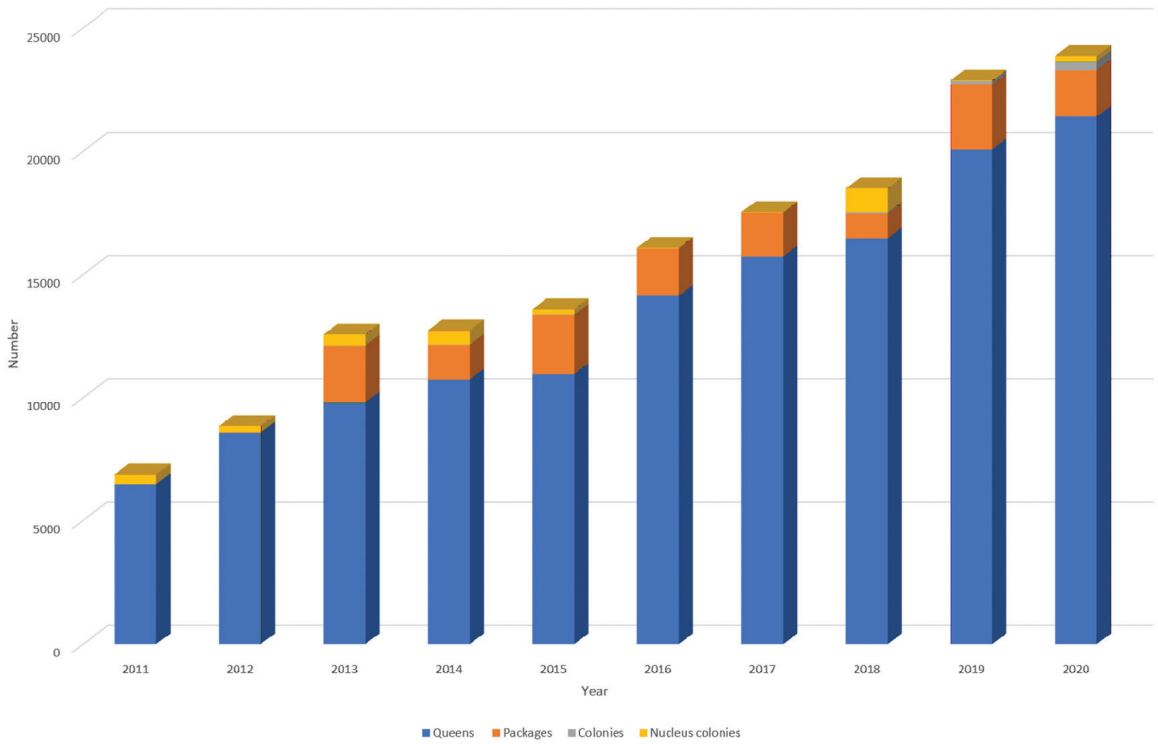
With the exit of the United Kingdom (UK) from the European Union (EU), our status has changed and new rules have come into force that are now being applied across the UK.[1] Great Britain (GB) is now trading with the EU as a third country and movements of honey bees from the EU to GB must undergo more stringent checks.

The key changes that have occurred this year are as follows:

- There is a new Defra system of notification called the Import of Products, Animals, Food and Feed System (IPAFFS). Detailed instructions on how to register along with guidance notes and frequently asked questions (FAQs) can be found on BeeBase in the imports and exports section.
- Only queen bees with up to 20 attendants per cage can be directly imported into GB from the EU. It is not permitted to import packages, nuclei, or full colonies.
- On arrival at destination, queens must be transferred to new cages and the old cages, attendants and packaging sent to a GB national reference laboratory (NRL) within five days of receipt. For England and Wales, the NRL is Fera Science Limited and for Scotland it is SASA (Science and Advice for Scottish Agriculture).

On entry into GB, paperwork checks will be performed on the consignment. Any deemed to be non-compliant – for

Annual honey bee imports into Great Britain (GB)



example by not having the correct health certificate – will be returned to the country of origin, or destroyed if the non-compliance cannot be resolved within seven days. Post import checks are also performed and are risk based, depending on country of origin. If an importer is contacted by an NBU inspector, the consignment must be held at its destination in its original form, until inspected or, if non-compliant, non-compliance is resolved.

The range of mitigation put in place for imports into GB is quite large and includes the following:

- Only countries where SHB and *Tropilaelaps* are notifiable pests can export to the UK.
- Imports must come with an export health certificate, issued by the exporting country's competent authority, showing that they have been inspected and have come from an area of at least 100 km radius which is not the subject of any restrictions associated with SHB or *Tropilaelaps*.
- Only queens can be imported direct into GB from the EU.
- All packaging, queen cages and attendants will be sent to the NRL and a proportion analysed as detailed below. All samples will be kept for six months.
- Post import checks are performed on consignments at the rate of 100 per cent for any imports from Sicily, 50 per cent from the rest of Italy and 25 per cent from the rest of the EU.
- Importers with high levels of imports are flagged on BeeBase as risk points and this highlights neighbouring apiaries for surveillance.
- Additionally, sentinel apiaries may be set up near to some of these importers. These can be voluntary sentinel apiaries where beekeepers regularly inspect for exotic pests and send in floor scrapings for analysis, or enhanced sentinel apiaries where NBU inspectors perform inspections and gather floor scraping several times a season.

Packages and colonies in hives are a greater risk pathway for these notifiable exotic pests than queens. Although the risk level has not changed in the past year, by moving to queen imports only from the EU, the risk of importing these exotic pests has reduced significantly.

In 2020, there were 289 consignments of queens, with a total of 21,405 queens imported into the UK from the EU. Due to these numbers, the laboratories face a huge challenge in carrying out their duties. Following consultation with Defra, Fera Science Limited checks 25 per cent of all consignments imported into England and Wales from the EU and 50 per cent of all consignments imported from Italy.

Tropilaelaps mites on honey bee larvae and pupae

After the queens have been decanted into new cages by the importing beekeeper, the original packaging, along with all the queen cages and attendant worker bees, are sent into the laboratory for diagnostic checks. To ensure that all the bees and any introduced statutory notifiable pests are killed before the checks are completed, packages are frozen for at least 24 hours. All unchecked samples received into the laboratory are kept frozen for a minimum of six months. This ensures samples can be retrospectively checked should a statutory notifiable pest be detected in the exporting country or a related consignment from the same supplier.

To the end of June 2021, Fera Science had received 47 consignments, containing a total of 8,335 queen cages of which 18 consignments, containing a total of 1,707 queen cages, have been identified for laboratory checks.

After freezing, all the packaging, cages and attendant worker bees are visually checked for the adults, larvae, and eggs of SHB and for *Tropilaelaps* mites. The adult attendant workers are removed from the queen cages and washed through a series of sieves of decreasing apertures. This process ensures that any phoretic mites, larvae or beetles that may not be visible are removed from the bees and caught in the sieves. The sieves are placed in bowls containing 100 per cent ethanol which causes any mites and beetles to float to the surface due to their chitinous exoskeletons. Any larvae, floating insects or mites are then collected and examined using a dissecting microscope for identification.

SHB eggs can be particularly difficult to see if they are contained within the fondant feed of the queen cage. To separate out any eggs buried in the fondant, the cages are placed in warm water and stirred until all the fondant is dissolved. The cages are then washed through a 0.355 mm aperture sieve followed by the water containing the dissolved fondant (and any potential eggs). The sieve is then placed in a bowl containing 100 per cent ethanol, causing any eggs to float to the surface for collection and identification.

Summary

We have focused on the key changes that have occurred over recent times and Asian hornet and import changes in particular, as these are two areas of great interest to beekeepers. Work will continue developing our procedures and contingency plans and we will let you know when new plans are published. □

Further Details

Website (BeeBase)
www.nationalbeeunit.com

References

1. Parker, A. Honey Bee Imports Into Great Britain. *Bee Farmer*, **7**(2), pp 18–19.

Animal & Plant Health Agency