Swarms and Honeybee Health

There are three types of swarms: reproductive swarms, non-reproductive swarms (also known as absconding!) and artificial swarms. This month's bulletin looks at the relationship between each of these and honeybee health.

Reproductive Swarms

This is the classical type of swarming that you immediately think of. The colony becomes congested with adult bees and brood, swarm cells are made, and on the day the first queen cell is sealed, the prime swarm takes off with the original queen. Sometimes cast swarms headed by virgin queens follow suit. Collecting these swarms is often seen as a supply of free bees. It's also a good way of introducing genetic diversity into your apiary.
However, there is justifiable concern that swarms that did not originate from one of your own colonies (!) may introduce disease into your apiary. Severely diseased colonies are weak and will not swarm, but the potential for less severely affected colonies to carry disease is there.
Introducing foulbrood into your apiary is the big worry and infected swarming honeybees can carry the disease in their honey crop. Honeybees can also carry Nosema (now known as Vairimorpha) and chalkbrood spores in their gut, although this is unlikely to cause a problem in a swarm unless the colony fails to build up and remains weak. Bees with Deformed Wing Virus (DWV) and Chronic Bee Paralysis Virus (CBPV) can't fly – although bees infected with CBPV take 5 days to develop symptoms and so potentially could form part of a swarm, but it would be obvious very quickly that they harboured the disease.
Varroa mites can also be transmitted by swarms, bringing with them a number of viruses that can adversely affect honeybee health. Somewhere between 10-40% of mites in a colony leave with the swarm. As the queen reduces her egg laying before swarming there are fewer uncapped larvae for the mites to target and there are therefore more mites on adult bees (i.e. more than there are under non-swarming conditions when they are safely

tucked up with, and feeding on, the larvae). Therefore, you should assume that any swarm you catch has phoretic varroa mites.

Reducing the Risk

Concern about disease shouldn't deter you from catching swarms, but you do need a plan in place to minimise the risk of introducing disease into your apiary. The following advice is based on best practice.

1. Hive swarms on foundation and don't feed for at least 48 hours. The bees gorge on honey before swarming and will use this honey to draw out foundation. In the event that it does harbour foulbrood it will be used to make comb rather than stored. There will be no brood to feed for a few days and so not feeding will not cause any harm to the new colony.

2. Quarantine swarms. This is a difficult one. It will be easy to quarantine a swarm more than 3 miles from your apiary, but is it also more than 3 miles from someone else's apiary? And does it matter? Yes, it probably does. There is evidence that flowers can act as hubs for disease transmission between honeybees and also other bee species. DWV RNA has been found in pollen from foragers, and honeybees infected with Nosema can contaminate sources of forage and this will infect other foragers. Fortunately, there is no current evidence that EFB is spread by foraging.

   Drifting within an apiary is one of the main causes of disease spread (robbing and the beekeeper being the others) and so if you can't find somewhere to use as a quarantine apiary the swarm should be situated as far as possible from your own hives to reduce the possibility of drifting. It would be prudent to have the entrance facing a different direction too, especially if you are short on space. Current guidance is to quarantine swarms for two brood cycles.

3. Treat varroa. Varroa mites in a swarm are all phoretic, there will be no capped brood until day 9 after the swarm and so this is the ideal opportunity to treat with oxalic acid. There are also no supers on which is a prerequisite for any chemical varroa treatment.

Non-Reproductive Swarms (Absconding)

Fortunately, this is a relatively rare occurrence as most of the colony departs leaving a small amount of brood, a few non-flying bees, virtually no stores and definitely no queen cells. Mini-nucs are more prone to absconding if the nuc is left in a sunny spot as the colony is too small for efficient thermoregulation. Absconding of full-sized colonies is a stress response and can be triggered by a number of stressors (which includes too frequent inspections by the beekeeper!). Pertinent to honeybee health, heavy Infestation with wax moth or varroa mite may cause weakening of the colony which then can't deal with the intruder and absconds.

There are reports of absconding during treatment with thymol based varroacides if the temperature gets too hot. High temperatures cause the vapour to be released more quickly and the bees are more active, spreading it around. Above 25°C it is recommended to use half the dose and make sure there is plenty of ventilation.

Artificial Swarms

Artificial swarms as swarm prevention or control provide a mid-season opportunity to treat phoretic mites. Further information can be found in our April bulletin.

Shook swarms are performed to control brood disease such as chalk brood and European Foulbrood (the latter on the advice of, and supervised by, a bee inspector). The adult bees are shaken into a brood box of new foundation and the old comb and brood are destroyed. More detailed information can be found here. As varroa mites replicate in sealed brood this is also a good method for treating a heavy infestation of varroa. As in a 'normal' swarm the mites in an artificial swarm are phoretic and can be treated with oxalic acid. It has been suggested that shook swarms can be used for treating Nosema, but heavy infections weaken the colony and a shook swarm may be too stressful.

Shook swarms can also be used on healthy colonies in early spring as a method of replacing old and possibly diseased comb. It works more quickly than the Bailey Comb Change.

The Bee Healthy Team **May 2024**

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