

## Braula fly

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*Braula (Braula coeca)* is a wingless fly, and is occasionally incorrectly called a bee louse.

This insect lives in honey bee colonies, but is not considered a significant pest or threat to the welfare of honey bees. It lives on the bodies of bees, holding tightly onto the adult bee with a set of comb-like structures on its front legs. When hungry, the fly moves close to the mouth parts of the bee on which it is residing, and steals some of the food fed to it by other bees. Only when a colony is broodless or small or the queen is old is there a likelihood of finding braula on the queen bee.

The braula fly does not damage or parasitise any stage of the honey bee life cycle. A number of braula flies can be observed on a single queen, which may reduce the food available to the queen and impair her egg-laying ability.

The main economic impact of braula fly occurs as a result of the larval stage burrowing under the cappings of honey combs. The appearance of this burrowing activity can detract from honey comb intended for sale. As most honey is extracted mechanically, braula fly does not pose a threat to regular liquid honey producers.

### Life cycle

The eggs are very small, measuring 0.84 mm by 0.42 mm. They can be deposited in many locations, including empty cells, brood cell cappings, wax debris on the bottom board and on capped honey comb. Only eggs deposited on capped honey comb will hatch. Eggs hatch in 2–7 days, depending on the temperature.

The larvae hatch and tunnel under the cappings, leaving narrow tracks about 1 mm wide across the surface of the honey comb. The tunnelling gives the comb a fractured appearance, and this is one of the determining factors of braula fly presence in a colony. The larvae progress through three instars (stages of development) before pupation. The larval stage can vary from 7–11 days. The pupa is

creamy-white in colour, measuring 1.4–1.7 mm long by 0.5–0.75 mm wide. This stage only takes 1–3 days, before the adult hatches.

The development from egg to adult can be as little as 10 days, and as much as 23 days, depending on the temperature (time of year) and, presumably, the availability of capped comb honey in the hive. Adult braula survive over winter on adult bees; they are not known to survive without direct contact with adult bees.

### Diagnostic

Simple observation of adult bees, particularly the resident queen bee, may reveal the presence of adult braula flies. For a more thorough examination, sticky boards/mats should be inserted on the bottom board. Two to three grams of tobacco should be added to the smoker. The lid should be pushed back slightly. A liberal amount of smoke (infused with tobacco) is applied into the entrance of the colony, until the smoke comes out through the top of the frames. Leave the colony for two minutes, and then remove the sticky mats. Careful examination of the sticky mats should reveal the presence of braula fly. Any specimens can be sent to the NSW DPI Entomology section (Orange Agricultural Institute, Forest Road, Orange 2800) for confirmation, if required.



Adult braula fly. Photo: Harold Ayton



*Evidence of braula larvae burrowing under comb cappings. Photo: Nick Annand*

### Treatments

The use of small amounts of tobacco in the bee smoker has been demonstrated as a very effective means of killing adult braula flies. The regular use of such treatment is probably not warranted unless comb honey is being produced. Prolonged exposure to smoke with tobacco can affect the bees, and may lead to some adult bees dying. The normal practice of uncapping honey combs in the extraction process is an effective means of controlling the larval stage of the braula fly.

To control the larval stage, comb honey should be stored in a freezer as soon as practical after its removal from a beehive, for at least 48 hours. This practice will ensure that all stages of the braula fly life cycle are killed. This will also kill all stages of other bee hive pests, such as wax moth and small hive beetle.

### Transmission

The adult fly attaches itself to an adult bee and thus can be spread by swarms, drifting bees, package bees and queen bees. The larva can be spread by the removal and transport of infected comb honey.

### Seriousness

The adult braula fly is not considered a serious threat to commercial beekeeping. It has become uncommon in many areas of the world, due principally to the treatments applied to bee colonies to control the bee parasite *Varroa* mite.

Braula fly has not been shown to cause weakening of honey bee colonies. Beekeepers specialising in comb honey production may need to consider control measures if the braula fly becomes a problem during peak production periods.

### References

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*Braula coeca* – University of Florida Institute of Food and Agricultural Sciences, plus Florida Department of Agriculture and Consumer Services.  
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### Acknowledgements

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