



Kenya Climate Smart  
Agriculture Project

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# Prevention and Control of Braula Fly (Bee Louse) in Honey Bees

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### Introduction

The bee louse (*Braula caeca*) is a parasitic pest of honey bees, often found on the head of the bee in an infestation. This is because the pest feeds on honey as well as nectar from the mouth-parts of honey bees. Bee lice reproduce in the beehive where their larvae burrow through honeycomb. In so doing, the larvae may cause heavy losses in both brood and stored honey.



*Braula fly on the bee head (left) and enlarged (right): Photo courtesy Beatrice Nganso*

The life cycle of bee lice moves through four stages. Adult lice lay eggs that hatch on honey cappings after 2-7 days, depending on the temperature the egg is exposed to in the beehive. Larvae emerge from hatched eggs and tunnel under the wax cappings in the beehive. At the end of the bee louse larvae, trails are sac-like appearances that may be pupating bee lice. Larvae undergo 3 larval stages and then pupate after 7-11 days. The pupa stage lasts between 1 to 3 days when adults emerge.

### Economic importance of bee louse

Adult bee lice have a life cycle that is very closely connected with infesting a honey bee colony. They roam on the bodies of adult bees looking to feed on the mouth secretions of honey bees. Bee lice do not harm adult bees directly. They become a nuisance in some areas of the beehive. The adult lice feed on the honey in the beehive. When they are able to access the royal jelly, bee lice show a preference for it over honey. These adult lice are very fast on their

feet. They scramble for food when nurse bees are feeding the queen or honey bee brood. This may cause the brood to be poorly fed when there are many bee lice in the beehive. It can also lead to poor feeding of the queen bee. The adult bees that result from such larvae are weak and may have shorter lifespans. Queen bees that are poorly fed as a result of hive bee-lice activity lay eggs poorly and therefore the bee population in the colony falls.

### Symptoms of a Bee Louse Infestation

Identification of bee-lice infestations relies on the examination of honey bees and the beehive. Early diagnosis of the problem in the beehive helps in putting management measures in place. The effect of bee-lice infestations may be missed at first but manifests clearly with large infestations as a weak honey bee colony. Symptoms of the weakened honey bee colony observed include low honey bee population and poorly laying queen.

Detection of a bee louse infestation is done using visual inspection. The bee-keeper looks out for the eggs, larvae and adult bee lice in the beehive. Areas of interest include the honey bees in the colony inhabiting the beehive at the time. Also observe the tunnels through the honey cappings where maggots eat honey and pollen.



*Tunnels of Braula fly maggots through the honey cappings (see the line-like tunnels on the capping). Photo courtesy of Dr Beatrice Nganso*

The following observations can be used to arrive at a conclusion that you have a honey bee louse problem in a beehive:

### 1. Bee Louse Size

- The size of bee lice varies from 1.6 mm to 3 mm.
- They have very reduced eyes just above their antennae.
- Eyes present on the cuticle are pale spots, surrounded by chitinous rings that are pigmented. Legs on the bee lice are short and quite robust.

### 2. Physical Appearance of Bee Lice

- Unlike most other species in the flies' family, bee lice do not have any wings or halteres
- They are therefore unable to fly and rely on locomotion using their legs to move from one place in the beehive to another.
- For visual recognition of the bee lice, look for small reddish-brown insects that look like lice or mites near the mouths of bees.

### 3. Larvae Recognition

- Larvae of bee lice are useful in the diagnosis of an infestation.
- In the suspected beehive, look out for very small maggot-like larvae with a posterior end that is flattened. The anterior end of the larvae is pointed.
- These larvae can be found tunneling through the wax comb. They feed on wax and pollen.



*Braula fly (bee louse) under microscope magnification: normal posture (left) and underside (right). Photo courtesy of Dr Muo Kasina*

### **Prevention and control**

This pest can be managed by uncapping honey combs before honey extraction. This practice eliminates their immature stages and reduce their populations. This activity is often enough to keep the larval stage of bee lice low.



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Compiled by: Dr Muo Kasina, Richard Kimitei  
and Daniel Toroitich

**For Further information contact:**

Institute Director, Apiculture and Beneficial  
Insects Research Institute

P.O. Box 32-30403 MARIGAT

Director.ABIRI@kalro.org

[www.kalro.org](http://www.kalro.org)

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