

Aethina tumida

Introduction

Aethina tumida, the Small Hive Beetle (SHB) is native to South Africa and is the most recent honeybee pest to invade the United States of America. Originally a minor pest of honeybees in tropical and sub-tropical Africa, it was identified in Florida, U.S.A on European honeybees in June 1998. At present, it is causing serious destruction of honeybee colonies throughout states on the eastern seaboard. It is not known how the small hive beetle was introduced into the U.S.A., however, it is claimed that the adult beetle will feed on the sap of decaying fruit and the pest probably came in on shipments of fruit from Africa. It is, therefore important that Caribbean Plant Quarantine personnel know about the SHB, so that they can intercept and prevent its entry into the sub-region.

Identity

Authority	: Murray
Classification	
Kingdom	: Animalia
Phylum	: Arthropoda
Class	: Insecta
Order	: Coleoptera
Family	: Nitidulidae
Genus	: <i>Aethina</i>
Species	: <i>tumida</i>
Common name	: Small hive beetle
Role	: Pest

Signs & Symptoms

The primary damage to colonies and stored honey caused by the small hive beetle is through the feeding activity of the larvae. Hives and stored equipment with heavy infection of beetles have been described as a “mess”. Activity of the larvae causes fermentation and a frothiness in the honey which develops a characteristic odour of decaying oranges.

Morphology

When *Aethina tumida* (Murray) beetles are in a honeybee colony nest or stored beekeeping equipment, the adults and larvae are quite easily seen.

Adult beetles are broad, oval to oblong in shape, 5 – 7 mm in length and 3.2 mm wide (Fig. 1). Just after pupation they are red in colour but soon become dark brown to nearly black. The eyes have a tuft of setae laterally and legs are broad and flattened. The small beetle larvae are elongate, whitish grubs, resembling the wax moth larvae, but yet distinctly different (Fig. 2). Larvae will grow 10 - 11 mm long and 1.6 mm wide. When looked at closely in bright sunlight or under a microscope, rows of small spines will be seen running along the length of the dorsum. While both beetle larvae and wax moth larvae have three pairs of legs just behind the head, wax moth larvae have a series of paired prolegs on the thorax and abdomen. The small hive beetle pupae are not found in the beehive but in the soil just below the hive entrance. The pupae are white to brown in colour.



Fig. 1: Small hive beetle, adult
(R. D. Fell, Department of Entomology, Virginia Tech, Blacksburg, VA 24061)

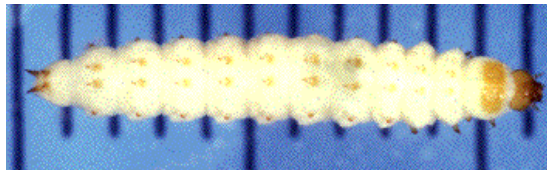


Fig. 2: Larva of the Small hive beetle
(R. D. Fell, Department of Entomology, Virginia Tech, Blacksburg, VA 24061)

Biology & Ecology

Fell (1999)

The small hive beetle is a member of the family Nitidulidae, most of which are scavengers or sap beetles. The adult beetle is dark brown to black and about one-half centimeter in length. The adults may live up to 6 months and can be observed almost anywhere in a hive, although they are most often found on the rear portion of the bottom board of a hive. Female beetles lay irregular masses of eggs in cracks or crevices in a hive. The eggs hatch in 2 - 3 days into white-coloured larvae that will grow to 10 - 11 mm in length.

Larvae feed on pollen and honey, damaging combs, and require about 10 - 16 days to mature. Larvae that are ready to pupate leave the hive and burrow into soil near the hive. The pupation period may last approximately 3 - 4 weeks. Newly emerged adults seek out hives and females generally mate and begin egg laying about a week after emergence. Hive beetles may have 4 - 5 generations a year during the warmer seasons.

Dispersal

SHBs can be dispersed via infested fruit and honeybee queens. Unprocessed bee products from infested colonies can also transport SHB to uninfested colonies.

Management

Cultural Control

The first line of defense is sanitation in the bee yard and honey house and having strong hives. Weak hives should be re-queened and care should be taken against using infested equipment in non-infested hives. Protection of stored equipment is recommended and supers with honey should not be left standing for any length of time.

Chemical Control

PDB (paradichlorobenzene) can be used to protect empty stored combs. Coumaphos bee strips can also be used in hives.

Host Notes

Aethina tumida (Murray), the Small Hive Beetle, belongs to the family Nitidulidae, which are the sap beetles. Members of this family are found in or on fermenting or decaying fruits, on flowing plant sap, on flowers and some types of fungi. A few occur on dead animals. *Aethina tumida* (Murray) has long been known as a pest of honeybee colonies.

Distribution

Sanford (1999)

Aethina tumida is a pest of honeybees in sub tropical and tropical Africa. Since 1998, they can be found in the United States of America in the states of Florida, Georgia, North and South Carolina, Pennsylvania, Ohio, Minnesota, Michigan and New Jersey.

Pest Significance

A. tumida has its origin in Africa where it is a minor pest of honeybees. It is now present in the eastern seaboard of the USA where it is becoming a serious pest. It is of quarantine importance to the Caribbean and every effort should be made to prevent its entry.

It can be easily brought into the Caribbean, especially on shipments of fruits, other plant produce, honeybee queens and unprocessed bee products from infested colonies in the United States and Africa. Caribbean Plant Protection Personnel need to be vigilant in continuously looking for *Aethina tumida*.

INSPECTION PROCEDURES

Plant Quarantine Personnel should closely examine all fruits, honeybees and raw pollen coming into their countries to look for adult small hive beetles. As agreed to by participants at the Third Caribbean Beekeeping Congress held in Jamaica in September 2002, Caribbean states should stop allowing the importation of any queen bees into their countries. Unprocessed pollen granules and beeswax should also be prohibited.

In the bee colony, the adult beetles and numerous beetle larvae can be easily seen in a severely infested colony. With slight infestations, it will be necessary to examine the bottom

board where they prefer to hide. A simple trap is to place a piece of corrugated cardboard (with one side of the cardboard removed to expose the corrugation) on the bottom board at the furthest side from the beehive entrance. The exposed corrugated side is faced downwards and the beetles hide in the tunnels created.

Bibliography

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<http://www.ifas.ufl.edu/~mts/apishtm/apis98/apjul98.htm#1>

Web Resources-

- www.beekeeping.com/articles/us/small_hive_beetle.htm
www.ento.vt.edu/~fell/apiculture/hivebeetle
<http://www.ifas.ufl.edu/~mts/apishtm/apis98/apjul98.htm#1>