

March 2008

CHAPTER 2.9.X.

**AETHINA TUMIDA (SMALL HIVE BEETLE)  
INFESTATION OF HONEY BEES**

Article 2.9.X.1.

For the purposes of this chapter, small hive beetle (SHB) is an *infestation* of bee colonies by the beetle *Aethina tumida*, which is ~~an ectoparasite a free-living predator and scavenger~~ affecting populations of the honey bee *Apis mellifera* L. It can also parasitise bumble bee *Bombus terrestris* colonies under experimental conditions, and although *infestation* has not been demonstrated in wild populations, *Bombus* spp. must also be considered to be susceptible to *infestation*.

The adult beetle is attracted to bee colonies to reproduce, although it can survive and reproduce independently in other natural environments, using other food ~~supplies as its nutritional~~ sources, including certain types of fruit. Hence once it is established within a localised environment, it is extremely difficult to eradicate.

The life cycle of *Aethina tumida* begins with the adult beetle laying eggs within infested *hives*. These are usually laid in irregular masses in *hive* crevices or brood combs. After 2-6 days, the eggs hatch and the emerging larvae begin to feed ~~vociferously voraciously~~ on brood comb, bee eggs, pollen and honey within the *hive*. The SHB has a high reproductive potential. Each female can produce about 1,000 eggs in its four to six months of life. At maturation (approximately 10-29 days after hatching), the larvae exit the *hive* and burrow into soil around the *hive* entrance. Adult beetles emerge after an average of 3-4 weeks, although pupation can take between 8 and 60 days depending on temperature and moisture levels ~~(usually takes 3 to 4 weeks)~~.

The life span of an adult beetle depends on environmental conditions such as temperature and humidity but, in practice, adult beetles can live for at least 6 months and, in favourable reproductive conditions, the female is capable of laying new egg batches every 5-12 weeks. The beetle is able to survive at least two weeks without food and 50 days on brood combs.

Early signs of *infestation* may go unnoticed, but the growth in the beetle population is rapid, leading to high mortality in the *hive*. Because *Aethina tumida* can be found and can thrive within the natural environment, and can fly up to a distance of 6-13km from its nest site, it is capable of dispersing rapidly and directly colonising *hives*. ~~This Dispersal includes following or accompanying swarms. It also does not require direct contact between adult bees to spread infestation Spread of infestation does not require contact between adult bees.~~ However, the movement of adult bees, honeycomb and other apiculture products ~~and used equipment associated with bee-keeping~~ may all cause *infestations* to spread to previously unaffected colonies.

Standards for diagnostic tests are described in the *Terrestrial Manual*.

## Article 2.9.X.2.

The *Aethina tumida* status of a country or *zone* can only be determined after considering the following criteria:

1. a *risk assessment* has been conducted, identifying all potential factors for *Aethina tumida* occurrence and their historic perspective, including *disease/pest* incidence data from permanent official sanitary surveillance of *apiaries* programme;
2. *Aethina tumida* infestation should be notifiable in the whole country, and all *clinical* signs suggestive of *Aethina tumida* infestation should be subjected to field and laboratory investigations;
3. on-going awareness and training programmes should be in place to encourage reporting of all *cases* suggestive of *Aethina tumida* infestation;
4. the *Veterinary Competent Authority* or other competent authority with responsibility for the health of honey bees should have current knowledge of, and authority over, all domesticated *apiaries* in the country.

## Article 2.9.X.3.

Country or zone free from *Aethina tumida*1. Historically free status

A country or *zone* may be considered free from the *disease pest* after conducting a *risk assessment* as referred to in Article 2.9.X.2. but without formally applying a specific surveillance programme if the country or *zone* complies with the provisions of Article 3.8.1.26.

2. Free status as a result of an eradication programme

A country or *zone* which does not meet the conditions of point 1 above may be considered free from *Aethina tumida* infestation after conducting a *risk assessment* as referred to in Article 2.9.X.2. and when:

- a) the *Veterinary Competent Authority* or other competent authority with responsibility for the health of honey bees has current knowledge of, and authority over, all domesticated *apiaries* existing in the country or *zone*;
- b) *Aethina tumida* infestation is notifiable in the whole country or *zone*, and any *clinical cases* suggestive of *Aethina tumida* infestation are subjected to field and laboratory investigations; a contingency plan is in place describing controls and inspection activities;
- c) for the 5 years following the last reported *case* of *Aethina tumida* infestation, an annual survey supervised by the *Veterinary Competent Authority*, with negative results, *have has* been carried out on a representative sample of *apiaries* in the country or *zone* to provide a confidence level of at least 95% of detecting *Aethina tumida* infestation if at least 1% of the *apiaries* were infested at a within-*apiary* prevalence rate of at least 5% of the *hives*; such surveys may be targeted towards areas with a higher likelihood of *infestation*;

- d) to maintain free status, an annual survey supervised by the *Veterinary Competent Authority*, with negative results, is carried out on a representative sample of *apiaries* in the country or *zone* to indicate that there *has have* been no new *cases*; such surveys may be targeted towards areas with a higher likelihood of *infestation*;
- e) all equipment associated with previously infested *apiaries* has been destroyed, or cleaned and sterilised to ensure the destruction of *Aethina tumida* spp., in conformity with one of the procedures referred to in Appendix X.X.X. (under study);
- f) the soil and undergrowth in the immediate vicinity of all infested *apiaries* has been treated with a soil drench or similar suitable treatment that is efficacious in destroying incubating *Aethina tumida* larvae and pupae;
- g) the importation of the *commodities* listed in this Chapter into the country or *zone* is carried out; in conformity with the recommendations of this Chapter.

#### Article 2.9.X.4.

Regardless of the status of the *exporting country* with regard to *Aethina tumida* infestation, *Veterinary Competent Authorities* should authorise without restriction the import or transit through their territory of the following *commodities*:

1. honey bee semen and honey bee venom;
2. *packaged* extracted honey, refined or rendered beeswax, propolis and *frozen or dried* royal jelly.

#### Article 2.9.X.5.

*Veterinary Competent Authorities* of *importing countries* should require:

for individual consignments containing a single live queen honey bee, accompanied by a small number of associated attendants (a maximum of 20 attendants per queen)

the presentation of an *international veterinary certificate* attesting that the bees come from a country or *zone* officially free from *Aethina tumida* infestation

OR

the presentation of an *international veterinary certificate* including an attestation from the *Competent Authority* of the exporting third country stating that:

1. the bees come from *hives* or colonies which were inspected immediately prior to dispatch and show no *clinical* signs or suspicion of the presence of *Aethina tumida* or its eggs, larvae or pupae; and
2. come from an area of at least 100 km radius where no *apiary* has been subject to any restrictions associated with the occurrence of *Aethina tumida* for the previous 6 months; and
3. the bees and accompanying packaging presented for export have been thoroughly and individually inspected and do not contain *Aethina tumida* or its eggs, larvae or pupae; *and*
4. the consignment of bees is covered with fine mesh through which a live beetle cannot enter.

## Article 2.9.X.6.

Veterinary Competent Authorities of importing countries should require:

for live worker bees, drone bees or bee colonies with or without associated brood combs

the presentation of an *international veterinary certificate* attesting that the bees;

1. come from a country or *zone* officially free from *Aethina tumida* infestation,

and AND

2. the bees and accompanying packaging presented for export have been inspected and do not contain *Aethina tumida* or its eggs, larvae or pupae.

## Article 2.9.X.7.

Veterinary Competent Authorities of importing countries should require:

for eggs, larvae and pupae of honey bees

the presentation of an *international veterinary certificate* attesting that the products:

1. were sourced from a free country or *zone* (under study);

OR

2. have been isolated from queens in a *quarantine station*; and

3. are from *hives* or come from *hives* or colonies which were inspected immediately prior to entry into the *quarantine station* and show no clinical signs or suspicion of the presence of *Aethina tumida* or its eggs or larvae or pupae then and during the quarantine period.

## Article 2.9.X.8.

Veterinary Competent Authorities of importing countries should require:

for used equipment associated with beekeeping

the presentation of an *international veterinary certificate* attesting that:

1. the equipment:

EITHER

a) comes from a country or *zone* free from *Aethina tumida* infestation; and

b) contains no live honey bees or bee brood;

OR

c) contains no live honey bees or bee brood;and

- d) has been thoroughly cleaned, and treated to ensure the destruction of *Aethina tumida* spp., in conformity with one of the procedures referred to in Appendix XXX (under study); and
2. all precautions have been taken to prevent *infestation*/contamination.

Article 2.9.X.9.

Veterinary Competent Authorities of importing countries should require:

for honey-bee collected pollen and beeswax (in the form of honeycomb)

the presentation of an *international veterinary certificate* attesting that:

1. the products:

EITHER

- a) comes from a country or *zone* free from *Aethina tumida* infestation; and
- b) contains no live honey bees or bee brood;

OR

- c) contains no live honey bees or bee brood; and
- d) has been thoroughly cleaned, and treated to ensure the destruction of *Aethina tumida* spp., in conformity with one of the procedures referred to in Appendix X.X.X. (under study); and

2. all precautions have been taken to prevent *infestation*/contamination.

Article 2.9.X.10.

Veterinary Competent Authorities of importing countries should require:

for comb honey

the presentation of an *international veterinary certificate* attesting that the products:

- 1. comes from a country or *zone* free from *Aethina tumida* infestation; and
- 2. contains no live honey bees or bee brood.