**NEW RECORD OF THE SMALL HIVE BEETLE (*Aethina tumida*** Linnaeus) **IN *Apis mellifera*** Linnaeus **BEE COLONIES FROM BAPATLA, ANDHRA PRADESH, INDIA**

**ABSTRACT**

*The Small Hive Beetle (SHB) Aethina tumida Murray, 1867(Coleoptera: Nitidulidae) a pest of honey bees, is reported from colonies of European honeybees, Apis mellifera Linnaeus in Bapatla, Andhra Pradesh. Larvae cause enormous damage to the hives, digging tunnels among the cells of the honeycomb to feed on pollen, honey and bee brood. The SHB larvae caused 80 per cent damage to the bee colonies present in Burlavaripalem by feeding bee wax and pupae of bees, ultimately led to destroy entire colonies as well as stored unextracted honeycombs. The finding is important, as it poses a serious threat to Apis mellifera colonies by damaging honey and weakening colony and health. Early detection and reporting of such invasive species are critical for implementing timely management strategies.*

Key words: Honey bee, *Apis mellifera*, Small hive beetle *Aethina tumida*, Invasive species,

Bapatla, Andhra Pradesh

**Introduction**

 Beekeeping is one of the livelihood of Bapatla, Andhra Pradesh. They keep their honey bees in hives during dearth period or flora shortage time they follow the migratory beekeeping systems. Migratory beekeeping is becoming increasingly popular in Andhra Pradesh. Migratory beekeeping involves moving honeybee colonies (hives) from one location to another to take advantage of different flowering periods of different crops and other plants and nectar and pollen sources.

The small hive beetle *Aethina tumida* belongs to the family Nitidulidae of order Coleoptera.Small hive beetles are native to sub-Saharan Africa, where they live as scavengers and symbionts in colonies of African sub species of *Apis mellifera* (Neumann and Elzen, 2004). The small hive beetle is a common and most harmful bee pest worldwide. It was first found in Asia in the Philippines in 2014, South Korea in 2016, and China in 2017 (Papach *et al*., 2023). SHB was recorded in the bee hives in Madhuban apiary located in Amdanga, North Parganas district in West Bengal, India (Jhikmik,2024). It infests and attack honeybee colonies of *Apis mellifera* Linnaeus and *Apis cerana* Fabricius, as well as those of stingless and bumble bees.SHB is serious threat to beekeeping, and its spread around the world is of great concern. The small hive beetle primarily lives within the beehive. Adults and larvae of small hive beetles feed on honey bee brood, honey and pollen. While feeding on food stores the remaining honey is fermenting and the comb is destroyed. The beetles can promote structural collapse of the nest and cause the adult honey bees to abscond from severely infested colonies. The extent of beetle associated damage depends on climate, colony strength and other conditions. Small hive beetles tend to be more problematic in areas with warm temperatures and high humidity. The small hive beetle can be a serious problem in honey-extracting facilities where stored comb, honey and wax cappings are potential feeding and breeding areas.

**Material and Methods**

Beekeepers move the honey bee colonies particularly *A. mellifera* to the surrounding areas of mandals of Gannavaram, Ponnur, Tenali, Chirala and Bapatla in the months of October-November months every year to exploit nectar and pollen yielding plants including crop plants and weeds particularly *Cressa cretica* for improving the overall honey yield. Bapatla is situated at an altitude of 8 meters (26 feet) mean seas level from the coast of the Bay of Bengal. Chirala, is a town in Andhra Pradesh, India, is located at an altitude of 3 meters (9.8 feet) mean sea level from the coast of the Bay of Bengal.  Bapatla and Chirala are in the Bapatla district of Andhra Pradesh.

One hundred and twenty *Apis mellifera* honeybee colonies were monitored and examined visually individual frames, hive covers and bottom boards of each colony in Chirala and Bapatla in the month of January 2025. Adults and grubs of Small hive beetles were noticed in one hundred and twenty honeybee colonies in apiaries of Agricultural College, Bapatla and Burlavaripalem village, Chirala mandal, Bapatla district in Andhra Pradesh, India.

**Results and Discussion**

**Identification characteristics of small hive beetle:**

Diagnosis Oval, dorsally convex, ventrally sub depressed, somewhat shiny, dorsum reddish brown to black; antennae 11-segmented with the last three antennomeres transformed into a compact club; dorsum moderately pubescent, with short, fine, golden, decumbent pubescence, legs flattened, femora, tibia and tarsi distinctly dilated. Last abdominal tergite partially covered by the elytra. Tegmen and median lobe of male genitalia as in Fig. 1 and 2 respectively.

**Measurements (in mm.):** Total length 5.2–5.8, width of head across eyes 1.09, length of antenna1.07–1.19, length and width of prothorax 1.63–1.89, and 3.25–3.83, length and width of elytra together 2.53–3.06 and 3.24–3.87.

All the one hundred and twenty honeybee colonies were examined visually for hive beetle infestation and adults and grubs were found in all the colonies. The first sign of infestation was occurrence of beetles in the colony.Adults and grubs of beetles run across the comb when the top cover and inner covers of the hive were opned and moved down away from light (Figure1and 2).The grubs of the small hive beetle were congregated at corners by which these beetles distinguishes from wax moth larvae. The length of the larvae of small hive beetle is less than a mature larvae of the wax moth larvae. Only thoracic legs are found in larvae of small hive beetle while in larvae of wax.

The specimens of small hive beetle were sent to the Zoological Survey of India ( ZSI), Kolkata for identification up to species level. Based on morphological structures and genitalia, it was confirmed the identity of the beetle as *Aethina tumida*.

Eggs were observed in cracks of bottom board and on the bottom board. After hatching, larvae burrow and tunnel through comb, piercing and damaging the wax comb and cell caps. Larvae eat honey, pollen and live honey bee eggs, larvae and pupae. Larvae defecate in the honey causing it to ferment. The fermenting honey has an odour of decaying oranges. A mix of fermenting honey, secretions and excrement results in a slime on the combs and other components in the hive. Contaminated honey is unsuitable for sale and unacceptable to bees as food. Honey bee queens may stop egg laying and the number of adult bees in the hive may fall quickly. After full maturity of grubs pupate in soil near the hives. The honey bee colony may leave when SHB infestations are heavy and slime is present.

120 colonies were monitored for infestation of small hive beetle in apiaries of Agricultural College, Bapatla and Burlavaripalem village, Chirala mandal, Bapatla district in Andhra Pradesh, India. Among all the colonies observed 96 colonies were infested with different degrees of damage by hive beetle. The adult beetles were observed more on edges of hives intead of middle of the hives.

**Conclusion**

Small Hive Beetle reproduces primarily in abandoned hives after established bee colonies have left them due to extreme infestation. Then, the beetles feed on pollen, honey and brood remains, left behind by the bee colony. The presence of SHB in honey bee colonies raises concerns for the country's beekeeping business.The warm humid climate of the current location is favourable for the small hive beetle to reproduce and perpetuate. The capacity of SHBs to travel vast distances poses a risk of severe infestation during the monsoon and post-monsoon seasons. Early detection and reporting of such invasive species are critical for implementing timely management strategies.

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Figure1:: Grubs of Small Hive Beetle on comb of beehive of *Apis mellifera*



Fig 2: : a.Grubs of Small Hive Beetle on bottom board of the beehive of *Apis mellifera*

b.Adult

