University of Tennessee, Knoxville
Trace: Tennessee Research and Creative Exchange

Insects, Pests, Plant Diseases and Weeds | UT Extension Publications

1-1-2002

SP594-Small Hive Beetle - A New Pest of Honey Bees

The University of Tennessee Agricultural Extension Service

Follow this and additional works at: http://trace.tennessee.edu/utk_agexdise

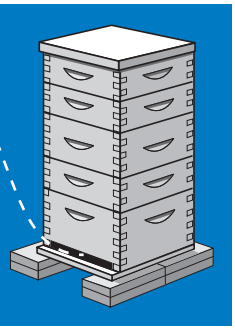
Part of the Entomology Commons

Recommended Citation
"SP594-Small Hive Beetle - A New Pest of Honey Bees," The University of Tennessee Agricultural Extension Service, SP594-2.5M-1/02 E12-4615-00-016-02, http://trace.tennessee.edu/utk_agexdise/4

The publications in this collection represent the historical publishing record of the UT Agricultural Experiment Station and do not necessarily reflect current scientific knowledge or recommendations. Current information about UT Ag Research can be found at the UT Ag Research website.
This Beekeeping is brought to you for free and open access by the UT Extension Publications at Trace: Tennessee Research and Creative Exchange. It has been accepted for inclusion in Insects, Pests, Plant Diseases and Weeds by an authorized administrator of Trace: Tennessee Research and Creative Exchange. For more information, please contact trace@utk.edu.

Agricultural Extension Service
The University of Tennessee

The Small Hive Beetle
– a New Pest of Honey Bees –



John A. Skinner, Associate Professor, and J. Patrick Parkman, Extension Assistant, Entomology and Plant Pathology

The small hive beetle, *Aethina tumida* Murray, a new pest of honey bees, was discovered damaging honey bee colonies in Florida in spring of 1998. It is native to South Africa. When and how it arrived in North America are unknown; however, the earliest known collection was made in 1996 in Charleston, SC. By 1999 it was established in Florida, Georgia and North and South Carolina. In 2000, it was discovered in Alabama, Ohio, Maine, Michigan, South Dakota and Mississippi. In Tennessee, the beetle was found in Polk County in 2000 and in Hamilton, Sequatchie and Dyer counties in 2001. Eradication efforts by the Tennessee Department of Agriculture in these counties may have delayed the pest's establishment and spread.

Adult beetles are 6 mm (1/4 inch) long, dark brown to black, flattened, oval to oblong in shape, with the head often tucked below the thorax (see figure). If the head is in view, the short antennae have a conspicuous club on the last segment. The larvae are elongate, whitish grubs that grow to 11 mm in length. They have tapered front and rear ends, and rows of small spines on their back. Beetle pupae are light tan to brown and can be found in the soil beneath and near the hive. Based on observations made in South Africa, eggs hatch in a few days and larvae complete development in 10 to 16 days. Pupation takes from three to four weeks. Several generations can occur within a year. Adults are strong fliers and easily disperse to new honey bee colonies to lay eggs.

Beetles are most likely to be found in colonies that have been weakened by some other factor, usually mites. Larvae are most damaging because they feed on honey, stored pollen and bee brood. As they feed, brood and honey combs are damaged, especially as the larvae burrow through them. Larvae defecate in the honey, causing it to ferment and bubble out of the cells. Bee brood rearing stops when beetle numbers are high, and the bees may abandon a heavily infested colony. As the infestation builds, fermented honey may run out of the hive. This is often the first external symptom that is noticed. Beetles usually infest and damage stored comb and supers of honey. Wax cappings may also be infested.

Prevention: Maintain healthy bee colonies capable of protecting all comb in the hive. This includes mite and disease prevention and having young, healthy queens. Unfortunately, recent research indicates that vegetable shortening patties containing granulated sugar and antibiotic, which are used in hives for prevention of foulbrood and for tracheal mite control, are attractive to beetle adults. Do not let honey supers sit for more than a day or two off colonies before extracting. Maintain a clean honey house. Carefully inspect honey bee packages received from areas where the beetle is established, such as Georgia and South Carolina.

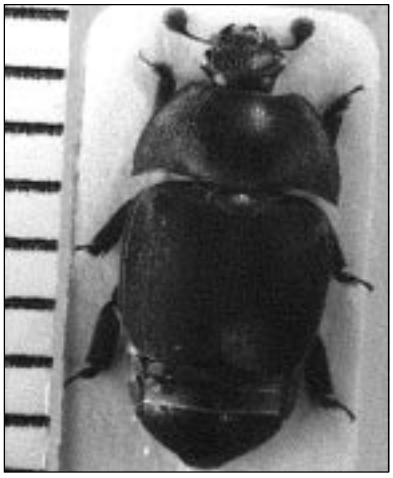
Detection: Colonies should be carefully inspected for signs of infestation. Adult beetles run across the comb when the hive is first opened; and they are often discovered underneath the hive cover. To detect adults in the top hive body, place the cover, inverted, on the top of an adjacent hive. Place the top hive body in the cover. Beetles will move downward away from the light. After a few minutes, lift the hive body to check for beetles in the cover. To detect beetles on the bottom board, another area where adults normally gather, place a corrugated cardboard square (4"x 4") with one surface peeled to expose the ridges inside. The cardboard is placed ridge side down on the bottom board of the hive. The next day the cardboard is removed and adult beetles, if present, should be found under it. The adults hide in dark, moist places. Unfortunately, adults do not get caught on sticky boards.

Small hive beetle larvae often congregate in corners, possibly to retain heat. This clustering distinguishes beetle larvae from wax moth larvae that are found scattered throughout weak colonies. Other distinguishing characteristics include size. Beetle larvae never reach the size of mature wax moth larvae. Also, beetle larvae have three pairs of jointed, "true" legs located behind the head. Wax moth larvae have many small, fleshy, uniform legs along the length of the body. And the bodies of beetle larvae have tough exteriors, while those of wax moth larvae are soft and easily penetrated.

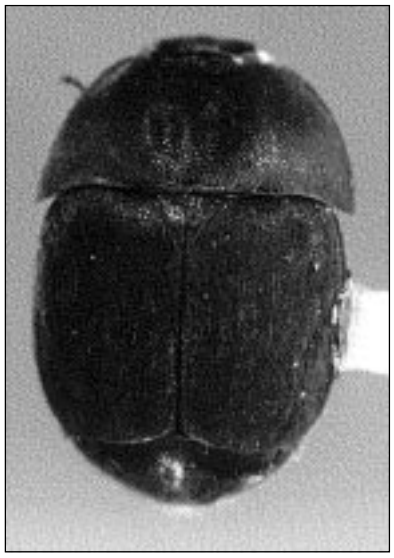
Control: CheckMite+® is registered for use in Tennessee as a within-hive treatment for small hive beetles. A soil drench insecticide, Gard Star®, can be used for treating under or around possibly infested hives. Follow label directions for both insecticides. These products are available from most beekeeping supply dealers. Freezing combs at 10 degrees F. for 24 hours will kill all life stages of the beetle. Comb containing beetle-spoiled honey will not be accepted by bees. The honey can be washed off with a garden hose and the bees will normally reuse the equipment.

Beekeepers should be made aware of this pest. Any suspected hive beetle adults or larvae should be placed in a small bottle of alcohol and forwarded to this office for confirmation through your county Extension office. Please have the agent contact the Entomology Department office at The University of Tennessee before sending a sample.

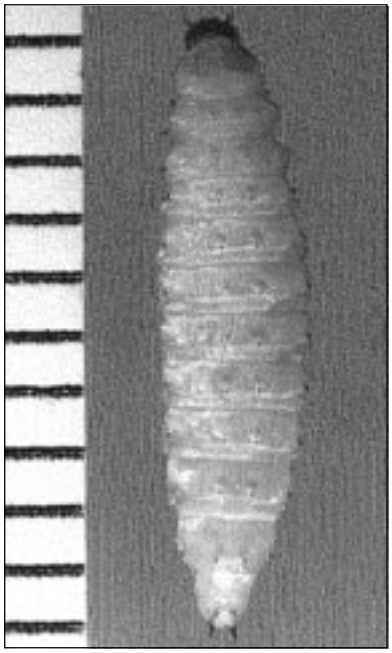
Portions of this publication were adapted from **Small Hive Beetle** by W. M. Hood, Entomology Insect Information Series. Clemson University Cooperative Extension Service publication EII/AP-2.



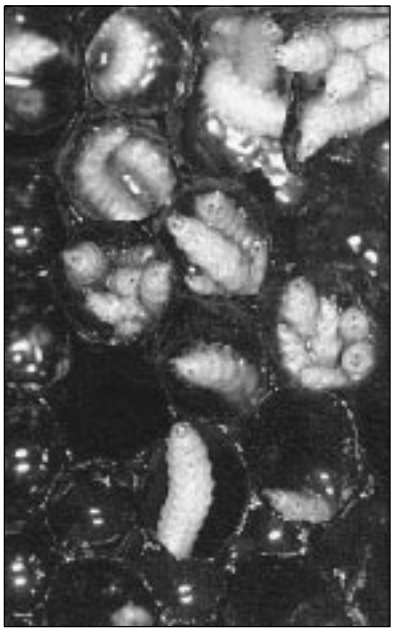
A.



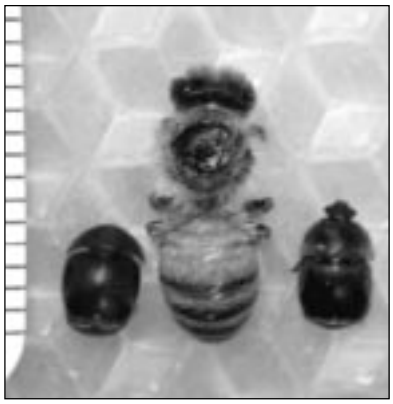
B.



C.



D.



E.

The small hive beetle, *Aethina tumida*. Clockwise from upper left:
A) Dorsal (top) view of adult with head and legs exposed.
B) More natural view of adult.
C) Dorsal view of larva.
D) Larvae in comb.
E) Honey bee and beetle adults.

Measurements in millimeters.
(photos A - D by Jeff Lotz, Division of Plant Industry, Florida Dept. of Agriculture and Consumer Services.)

SP594-2.5M-1/02
E12-4615-00-016-02

The Agricultural Extension Service offers its programs to all eligible persons regardless of race, religion, color, national origin, sex, age, disability or veteran status and is an Equal Opportunity Employer. COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS The University of Tennessee Institute of Agriculture, U.S. Department of Agriculture, and county governments cooperating in furtherance of Acts of May 8 and June 30, 1914.
Agricultural Extension Service, Charles L. Norman, Dean