The Small Hive Beetle

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www.thebeeyard.org
The Small Hive Beetle (SHB) Aethina tumida
family Nitidulidae, most of which are scavengers or sap beetle

Adult Lifespan: ~6 months

Eggs are laid in irregular masses, in cracks and crevices of a hive. Hatch in 2-3 days into white larvae, which grow 10-11mm.

Timing of the life cycle varies with respect to temperature and other factors.
Eggs hatch in 2-3 days into white larvae, which grow 10 to 11mm in length.
Larvae feed on pollen and wax, but will also eat honey, bee eggs, and bee larvae. And pollen, damaging the comb. They mature in 10 to 16 days.

When ready to pupate, the larvae leave the hive and burrow in the ground. Prefer sandy soils.

Pupation takes 3-4 weeks
Newly emerged adults seek a new hive and mate.
They are good flyers – fly up to five miles. They easily spread to other colonies.

4 or 5 generations per year. No reproduction in winter.
Native to Africa; first identified in Florida in 1998

Adults feed on fruits, such as cantaloupe; possibly imported in this manner
Reported Status of
Small Hive Beetle - *Aethina tumida*

Display Date: 09/16/2008
Last Survey: 09/08/2008

This map represents survey data over the last three years.
Extreme Case of SHB
When small hive beetles invade a beehive, they bring in a yeast that grows on the pollen. “As the yeast grows and ferments, it releases compounds that mimic honey bee alarm pheromones and are highly attractive to other beetles,” says Teal. “This sets off a cascading effect. When the beetle population gets too high, the bees have no choice but to abandon the hive, leaving beekeepers without honey and their bee colonies.”
Adult SHB are attracted to a hive via scent.

Studies have shown larger numbers of beetles in hives that have been recently opened by the beekeeper.
Larvae poop causes honey and pollen fermentation, creating slime. The scent has been described as “decaying orange”.

In extreme cases, the fermented honey runs out of the hive entrance.

Queens may stop laying and the workers may leave the colony if the poop-slime levels are too high.

Adult beetles are attracted by the slime scent.
Treatments for SHB
Using Checkmite strips to treat SHB

Step 1: Remove the honey supers to avoid contamination of stuff that you want to eat later.
Using Checkmite strips to treat SHB

Step 2: Prepare some cardboard squares (5”x5”) by removing the paper from one side, or use commercially available plastic squares ($0.35 from Mann Lake).
Using Checkmite strips to treat SHB

Step 3: Cut the checkmite strips in half and staple them to the cardboard squares.
Using Checkmite strips to treat SHB

Beetles will crawl in here, contact the pesticide and die (die, die, DIE!)
Using Checkmite strips to treat SHB

Step 4: Place the squares face-down near the center of the bottom board. Check for dead beetles in a week. Leave in for at least 42 but no more than 45 days. Replace honey supers 14 days after removal.
Hive Beetle Traps: Bee Swatter
Brushy Mountain ($2)

Insert Checkmite strip in slots

Slide swatter into hive through the front entrance

Beetles enter and contact the strip
Soil Drench

Y-Tex Gardstar® 40% EC Livestock and Premise Insecticide

Approved for Hive Beetle Use around the colony

Cut the grass first.. Then thoroughly wet the area 18-24” around the infested hive.  Apply after the bees are asleep (this is toxic to the bees)  
Or..  Apply to area 24-48 hours before installing a hive
Manufacturer’s Instructions:
9-12ml per gallon of water
Apply until surface is wet
1 gallon to 750-1000 square feet

Beecare.com’s Instructions:
5ml per gallon water
1 gal will treat 6 hives
Drench area 18-24” wide in front of the hive.

Cost:
~ $17 for 4oz
~ $80 for 1qt
Soil drench seems like a bad idea…

>> Kills Honeybees – must be applied after the bees go to bed. Must be careful to avoid contamination of flowers in the area.

>> Beetles can fly up to ten miles in search of a hive. Have you treated every hive in a 10mi radius?
Ten miles, as the beetle flies, from Eric’s beeyard
![Image of a mouse and cheese, symbolizing a trap.](image)

No pesticides, please...

Trapping the SHB

**Lure:**  
1/2 cup Apple Cider vinegar  
1/4 cup sugar, 1 cup water, 1 ripe banana peel, cut up finely, combined and allowed to ferment

**Trap Container.**  
Any small flat container, approx 1/2 to 1 inch deep, complete with press-on lid. About 1/2 way up the side drill a series of holes around the perimeter in through which the beetles will enter. In the center of the container place a large bottle cap to hold the lure liquid.
beetle-sized holes ~3/16" (soldering iron tip) Bait
Sandwich-box SHB Trap
Holes can be made with a hot soldering iron. Care must be taken to keep the holes small enough to exclude bees.

Add Wax Moth Attractant to Bottle Cap.
Add mineral oil to bottom of sandwich box.
Snap cover on Sandwich Box and place on top of frame bars.
Hive Beetle Traps: Dadant ($12)

- Grate w/SHB sized holes
- Vegetable Oil Tray
- Spacer
- Bottom Board
Hive Beetle Traps: Brusy Mountain ($13)
Hive Beetle Traps: Hood (Clemson University)
Brushy Mountain ($4)

Apple Cider Vinegar is used as bait
Place in #1 or #10 position in brood box
Hive Beetle Traps: AJ's Beetle Eater ($5, Dadant)

Fill with oil and place between top bars.
Hive Beetle Traps: Beetltra ($15 AU - $12 US)

“Killing Agents” include oil, soapy water, lime, etc. Lime is preferred – dehydrates and kills beetles.

3/16” slots cut in bottom board over tray.
SHB will readily invade stored equipment – think wax moths..

Paradichlorobenzene (moth crystals) is effective for protecting equipment during storage.
References and Further Reading...

http://everest.ento.vt.edu/~fell/apiculture/hivebeetle/index.html
http://maarec.psu.edu/pdfs/Small_Hive_Beetle_-_PMP.pdf
http://www.clemson.edu/newsroom/articles/2007/may/hoodbeetletrap.php5
http://www.ars.usda.gov/is/AR/archive/nov07/beetle1107.htm
http://www.beeworks.com/informationcentre/small_hive_beetle.html
http://www.cals.ncsu.edu/entomology/apiculture/PDF%20files/2.05.pdf
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