

Epstein's Law: If you think the problem is bad now, just wait until we've solved it.

Beekeepers love to hate small hive beetles (SHB). The little devils are easy to see, scurry around like tiny rats and certainly aren't good for business. We feel obligated to "do something" with regard to our bees so we wage war on the beetles.

Unfortunately our honey bees and our wallets can suffer collateral damage in The Great Beetle War. This is often unnecessary and worse than the original problem. There are basic things we can do to prevent SHBs from becoming an issue. Beyond that, as the philosopher Rodney King said, "Can we all get along?"

From whence they came

Small hive beetles are natural pests of honey bees in southern Africa. They came to the US in the late 1990s via the deepwater port at either Savannah, Georgia or Charleston, South Carolina. By 1998 they were being found in managed hives in South Carolina. They quickly spread to Georgia, Florida, North Carolina and beyond.

Not only do they easily travel along with the bees in commercial bee packages and in hives transported for pollination, but they are excellent flyers in their own right, have a keen sense of smell and can fly many miles to just the right home. In addition, they are not solely dependent on bee hives for their food and shelter; they can live just fine on rotten fruit, for example.

I first noticed SHBs in my northern Orange County hives around 2007 while beekeepers just a few miles away in Person County still had never seen them. Now SHBs are just about everywhere and are part of the background landscape of modern American beekeeping.

Life cycle

Adult SHB are about a ¼ inch long, reddish-brown to dark brown/black and look a little like brown ladybugs. When they are frightened,



Left: Small hive beetle, showing legs and antennae.
Right: SHB in defensive posture.

they tuck their legs and antennae under their shells, hunched up sort of like an armadillo.

Adults can live six months or longer and overwinter in the cluster along with the bees. Their shells make it very difficult for bees to cause them harm. So instead of killing SHB outright, honey bees will trap them in crevasses and then seal them in with propolis.

Interestingly enough, the SHB prisoners beg for food and are fed by their bee captors. But by being confined they cannot easily lay eggs.

These beetle prisons are often found along the rim of the inner cover. When the beekeeper removes the outer cover, the prison walls are ripped apart and the inmates gleefully escape.

SHB larvae are about ½ inch long and are light tan/cream colored. They have three pairs of legs on the front-most end of their body so they drag their bodies around behind them the way slugs do.

These two characteristics – color and means of movement – make it very easy to tell the difference between SHB larvae and wax moth larvae. Wax moth larvae are grayish white, not tan. They have legs at both the front and end of their bodies so they move along inch-worm fashion, not slug fashion. In addition, wax moth larvae leave tunnels in the comb along with wispy gray webbing, whereas SHB larvae leave a mess of fermenting honey mixed with a thick slimy mucous.

Unchecked, a single SHB female can lay a thousand eggs in her lifetime. She lays these in protected crevasses around the hive. The eggs take two to four days to hatch. The larvae then feed on pollen, honey and even bee brood. After a week to 10 days of this destruction, the larva leaves the hive at night and burrows around four inches into the ground to pupate. It may travel six feet or even much farther from



SHB larvae sliming comb

the hive before burrowing into the soil, so setting hives on slabs of concrete or similar material has no effect on pupation.

SHB remain in the pupal state for three to six weeks, after which time the adult emerges and uses its keen sense of smell to seek out a host hive. They are attracted not only to honey and comb but also to bee pheromones.

An understanding of SHB biology and life cycle makes a few points quite obvious:

1. Adult beetles are not a problem by themselves. They don't damage hives.
2. A single out-of-control SHB female can lay enough eggs to destroy a hive. If our goal was control through eradication, we would need to exterminate every beetle in order to be effective. That isn't realistic.
3. SHB pupae are not a problem for bee colonies by themselves. They don't even exist within the colony.
4. SHB larvae are the problem that needs to be understood. It is the larvae that destroy hives. Ironically, I have never seen an eradication scheme that targets SHB larvae except the one that I recommend below.
5. Strong honey bee colonies can keep adult SHB under control, limit egg-laying, prevent the presence of larvae and/or destroy larvae that may exist.

The follow-on to these points is the fact that strong, healthy hives do not succumb to SHB. SHB are opportunists which seek out weak hives. They seize the chance to thrive and

reproduce in an environment that allows them to do so, e.g. a dying hive.

SHB are a lot like the black vultures that are common in my community. When I see a flock of them alongside the road feasting on a deer, I never jump to the conclusion that the vultures killed the deer. No, that deer's days were numbered before the vultures became an issue. The vultures are actually performing a community service by cleaning up the roadway. They mean no harm, which is why American Indians called them "peace eagles". SHB clean up doomed hives in exactly the same way.

Basic management to prevent issues

After years of reviewing research and my own experience with these little critters, I am a firm believer that SHB are not an issue for beekeepers who manage their hives properly. This means controlling the Three S's:

1. **Space:** Do not provide more space in the hive than the bees can patrol. This means, for example, don't stack umpteen empty supers on a weak hive.
2. **Strength:** Don't mollycoddle weak hives; get rid of them by combining them with a strong hive. Treat your colonies with an effective miticide to keep varroa mites and the viruses associated with them from weakening your hives. (See [How Might We Smite Mites?](#)).
3. **Sun:** Keep hives in full sun. SHB thrive in shade, as do beekeepers, but your bees will do much better against pests and diseases in full sun. As a bonus, they'll also tend to be less defensive. North Carolina is not the Sahara Desert (I know because I've been [there!](#)). Full sun does not harm our NC colonies and I wish people would stop thinking that it does.

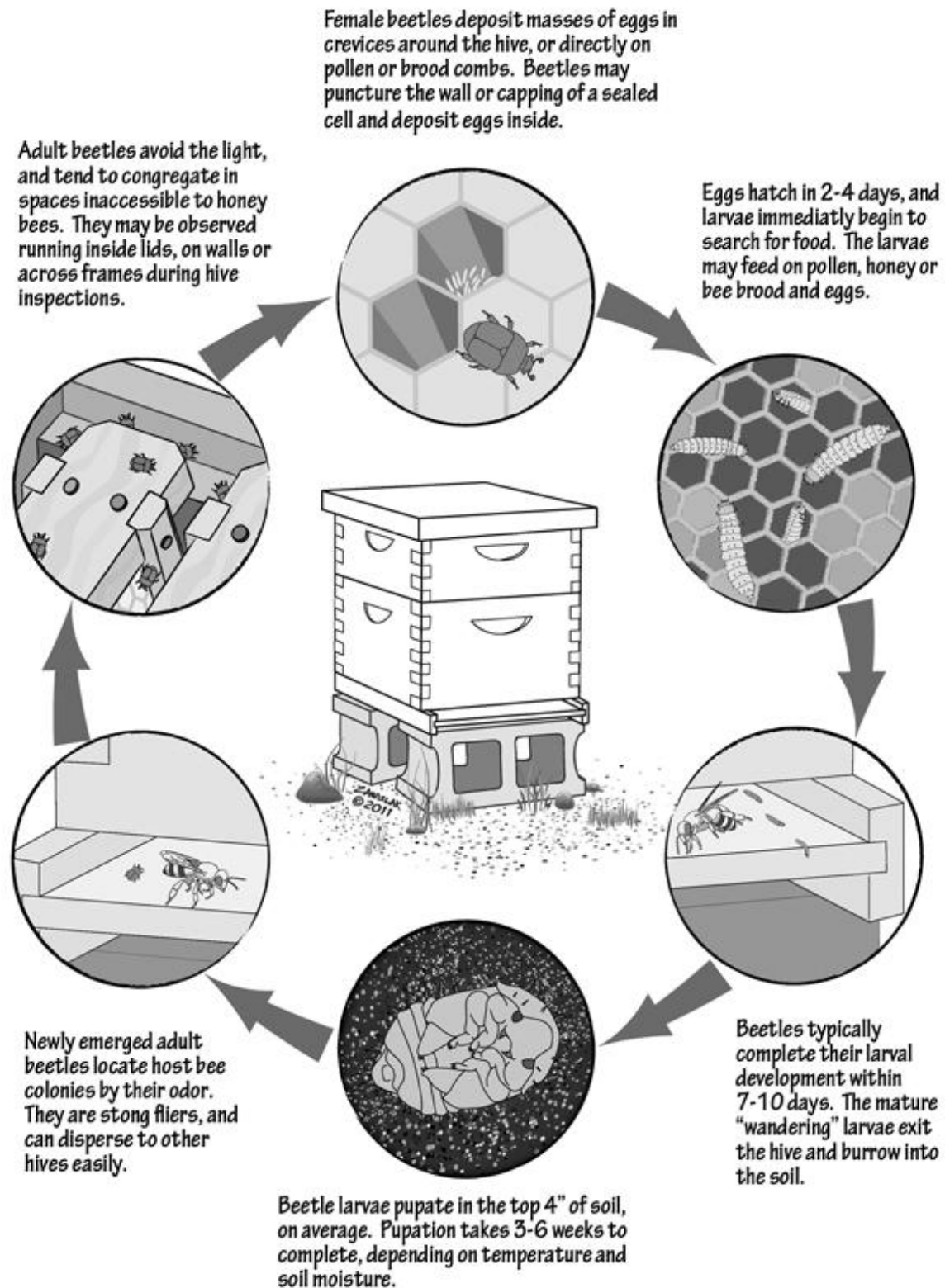
There are a few other management tweaks that you'll need to make to avoid SHB issues.

The first is with respect to honey harvesting. In the old days, we could pull honey supers one weekend and wait until the next weekend to actually extract them. No more, unless we want wigglers in our honey. Now we

must extract our honey as soon as possible, certainly within a day or two after getting the bees off the frames. If you are like me and use bee escapes to clear supers, the clock starts ticking when the escapes go on; after that, the

comb is not fully protected.

The second tweak is with respect to storing old comb. As with wax moths, SHB eggs and larvae can be killed by freezing. So freezing frames and storing them in a bug-proof



container is very effective. SHB (and wax moths) do not like air and sunlight either, so pure-wax comb from honey supers can sometimes be stored in a manner that subjects them to light and air (see page 3 of [Is Tigger Crazy?](#)).

Related to this is the need for thoughtful handling of burr comb, especially if it has brood, pollen or honey in it. Drop it in a bucket, set it in the shade and leave it alone for a week if you want to see the slimy mess that SHB larvae create. If you don't want to do an experiment like that, then freeze your burr comb

A third item on the SHB management watch-list is to ensure that you aren't creating bee-free pockets within the hive. These are the places SHB need to hide and lay eggs. All-plastic frames are notorious for this; they have plenty of nice beetle-sized crannies along the side bars that bees cannot police.

Gadgets

A lot of nifty gadgets are available to sate people's appetite for SHB carnage. All of them target the adult beetles, not the larvae. Many of the beetle traps have been university-tested to show that they trap more or fewer beetles than the next trap, but I have never seen an academic paper that shows that a trap has any impact on the health of a colony. They kill some of the adults... but does that matter? No credible source that I am aware of has said so. If you've seen such a paper, please send it to me.

If you are a gadgeteer then SHB doo-dads can be fun. After all, it is very satisfying to kill the little darlings. But kill the beetles, not the bees. A few years ago, there was research into an anti-SHB system whereby the only possible way to enter the hive was through a small tube. The idea was that the bees could guard this opening and exclude any beetles. The beetles were excluded just fine but all of the bees suffocated. Another scheme popular on YouTube uses corrugated plastic and the extremely dangerous neurotoxin coumaphos. Hmm... bees and beetles exchange food, so who gets poisoned? Other gadgets rely on an oil reservoir to drown the beetles. These can be tricky to insert in the hive, causing oil to spill

everywhere. Oil-soaked bees are not happy bees.

My personal favorite gadget for dispatching SHB uses a flat metal instrument (it looks a lot like a hive tool) and a horizontal wooden platform (the inner cover works well). Place the hive beetle on the platform and press the metal instrument downward in a rocking motion. If you hear a "crunch", you've performed the maneuver correctly.

Never assume that a gadget can replace attention to the Three S's mentioned above. If you do, you'll likely get a visit from the peace eagles!

More info

If you'd like to know more about SHB and why you should be aware of them but not worry excessively, check out the following:

[Managing Small Hive Beetles](#) on extension.org
[Featured Creatures](#) at the University of Florida
[The Small Hive Beetle](#) at NCSU

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