

Bed Bug Bites

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After you read this, some of you—no, probably most of you—will think I am certifiably nuts.

I did the unthinkable. I fed bed bugs...on myself...on purpose.

In mid-April, a young man brought live bed bugs (*Cimex lectularius*) to the extension office. They came from his girlfriend's apartment in Lincoln. After a couple months of being bitten, they finally dismantled the bed and box springs and found the little tormentors. I didn't count them all, but there must have been a couple dozen bugs in different stages of development. I was hoping to have live bed bugs to show at the May 21 workshop, so I was thrilled. I rolled up a length of corrugated cardboard, put it in a pint jar and threw the bugs in the jar. The little spaces in the cardboard make dandy hiding places for the bugs.

Okay, how do I keep them alive for more than a month? I finally decided I would have to feed them.

For those of you who are already grossed out by the mere thought of this, a U.S. Army medical entomologist, Harold Harlan, collected bed bugs in the late '60s. He has fed them regularly, every week or two for more than 40 years. I comforted myself with the fact he seems to be quite healthy despite the feedings. And, we know while bed bugs could transmit diseases, researchers have never been able to determine they actually do. I felt reasonably safe.

At first, I thought I would

feed them on the calf of my leg like Harold Harlan does. He holds a screened jar to his leg and the bed bugs feed through the screen. But, then I decided we should get video footage of a bed bug feeding. The calf of my leg just wouldn't work. I would have to feed them on my arm.

Feeding Bed Bugs

I constructed a small arena to confine the bed bugs. This arena consisted of a very small (two-inch) food storage container with the bottom cut off (Figure 1). I taped the arena to my arm with masking tape and dropped a bed bug into the container. In all, I fed seven bed bugs of different sizes, one by one. For some reason, one bed bug wouldn't feed...it just wandered around and around the arena.

The first bed bug probed in several locations before it settled down to feed. The initial probing felt very faintly itchy...less than when a mosquito probes your skin before it feeds. If I hadn't known it was probing, I wouldn't have even noticed. After probing for 30 seconds or so, the bug stretched and the body started to fill with blood. I didn't feel anything while it was feeding. Completely painless. It fed for about six minutes. When finished, it pulled its feeding proboscis out and quickly walked away. I put it back in my sealed jar.

This procedure was repeated with all the bugs. One bug pooped after feeding and left small droplets of black feces on my skin.

Bite Reactions

Not everyone reacts to bed bug bites, so I wasn't sure if I

would. A new study reports most people *do* react, especially if bitten repeatedly over time, which is the case with bed bugs infesting someone's home. This study also says bites don't show up right away, especially when a person is bitten the first time. With repeated bites, the delay will get shorter and shorter.

I had no reaction to the bites until day two after the initial bite, and several didn't show up until day five.

Stage 1: Days 2–3. The initial reaction was similar to a mosquito bite. Each bite had a small, raised light-colored "bump" in the middle. The bites were only just a little bit itchy.

Stage 2: From days 4–8, the bites were bright red, swollen and I felt a painful, burning itch, a little like chigger bites, only worse. I tried not to scratch them.

Stage 3: About day nine, the swelling went down and the itching lessened. I looked closely and could see capillaries and tiny blood blisters around the center of each bite.

Stage 4: About day 12, the area around each bite now looked like it was bruised.

I have shown the progression of the bites in figures 2-5.

What Did I Learn From This?

- Even though the literature says bed bug feeding is painless, I was surprised how completely painless it was. Bed bugs are very well-adapted to their lifestyle.
- I was not prepared for the bites to be painful. I had always heard they were very itchy, but didn't know there would be a burning, painful itchiness. Not everyone reacts



Figure 1: Set up used to feed bed bugs

the same way I did.

- The probing of small bugs and large bugs seemed to produce bites equally painful and itchy.
- The act of probing and injection of salivary secretions is what causes the "bite" reaction, not the feeding itself. I ended up with about 15 "bites," but only fed seven bed bugs.
- Because I had a two to five day reaction delay to the bite, I realized some people may be bitten and not realize it for several days. If traveling, they may not know where they were bitten.
- Not surprisingly, as the bites got worse and worse, I became less and less inclined to feed them again. I did feed another bug nine days after the first feedings. This time, my body reacted quicker and the bite was itchier sooner.
- If I were going to do this again, I would not have fed the bugs in such a localized area. I think it added to my discomfort.
- I was surprised how long it took for the bites to go away. From beginning to end, I still had signs of bites three weeks after feeding, although once the swelling went down, the itchiness went away.



Bed bugs are normally flat, but become distended and engorged when feeding. Recently fed bugs look like a different insect altogether.

In addition to my keeping the bugs alive, there were some other reasons for feeding the bed bugs. First, I have had clients call and describe bites to me, wanting me to verify they are bed bug bites. Some people come to the office and show bites to me. Since I had never experienced bites, I didn't feel comfortable helping people with this.

It is important to recognize bed bug bites visually change over time and may look like something else. After all, the "bite" is the body's reaction to a foreign substance, an allergic reaction and there could be other causes. To verify a bed bug bite, the bugs need to be found.

Second, I do a fair amount of traveling and it may come in handy someday knowing how I react to a bed bug bite. And third, this experience has been the basis for this article, video footage and photos, which will be put on our Web site. Check out <http://lanaster.unl.edu>



Figure 2: Bed bug bites on day 2



Figure 3: Bed bug bites on day 6



Figure 4: Bed bug bites on day 8



Figure 5: Bed bug bites on day 11

Bed Bug Interceptors

A new product is available, CLIMBUP™ Insect Interceptors, which may help prevent people from getting bitten by bed bugs. These are uniquely designed hard plastic cups, which fit under bed legs. Coated with a thin layer of talc, the slick plastic surface prevents bed bugs from crawling up the legs of the bed. To prevent feeding, the bed should be moved away from the wall. In addition, mattress and box springs should be completely encased in a bed bug proof encasement. One encasement shown to be bed-bug proof is Protect-A-Bed®. Both the CLIMBUP™ Insect Interceptors and

Protect-A-Bed® encasements are available through pest control companies who can buy them from distributors, like UnivarUSA. Find more information about these interceptors online at <http://www.insect-interceptor.com/>

According to an article in the latest Pest Control Technology Magazine (April 2009), researchers at Purdue compared the efficiency of using visual inspections with interceptors. They found six times more bed bugs using interceptors than visual inspections. This shows the difficulty of finding and treating all the locations where bed bugs hide.

Because visual inspections take so much time, these interceptors may be a cost effective method of finding bed bugs. They can also be reused.

In last month's NEBLINE, I wrote about using metal cans to intercept bed bugs from climbing bed legs. The researcher used ethylene glycol to catch bed bugs, but consumers should not do this. Ethylene glycol is a hazard to pets and children who might ingest it. A 1/2-inch layer of talcum powder and/or diatomaceous earth used in the bottom of cans to desiccate bugs, is much safer.

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Interceptors may help prevent bed bugs from crawling up the legs of bed legs and may help monitor for bed bugs.