

Notes from a Rogue entomologist:

Night of the living bedbug

BY RICHARD J. HILTON

If you read the paper or listen to any of the mass media, you are well aware that bedbugs are back with a vengeance. Indeed, the bedbug population seems to have exploded over the last few years. Much like zombies, another group that has seen resurgence in media attention, they are relentless, mindless, and their only desire is to feed on us.

Bedbugs belong to a group of insects referred to as "true" bugs whose mouthparts are modified to suck plant or animal fluids. These true bugs include plant feeders such as stinkbugs, squash bugs, box elder (or maple) bugs, and predators like the assassin bug. (It is worth noting that this group does not include ladybugs and lightning bugs, both of which are actually beetles and not true bugs.)

The closest relatives of the common bedbug, which prefers humans, are species that are usually found feeding on swallows and bats, with the bat bug being the most similar. It would appear that when humans began living in caves or fixed structures of the sort that bats might also inhabit, a "host-switch" took place and our species acquired a new partner, a blood brother, so to speak. On the positive side, the bedbug has, so far, not been connected to any transmission of human disease. Nevertheless, there's no denying that bedbugs are very creepy and no one likes to donate blood without being asked. So we are going to have to devise some new tactics for controlling them.

Speaking of new tactics, I got an email a few months ago from someone checking to see if any of the Oregon State University (OSU) entomologists had a colony of bedbugs that they could use to train dogs for sniffing them out. It is well-known that bedbugs emit a characteristic musky odor and, with large bedbug infestations, the smell can be very distinctive. However, dogs can smell and locate bedbugs when the population is still low, and they have

proven quite useful for this purpose. Unfortunately, it is an expensive service, mostly because the current demand for canine supersniffers far exceeds the supply.

With the return of the bedbug, research is booming. I attended the most recent national entomology meeting in Reno last November, and there were more presentations on the bedbug than any other insect species except the honeybee. I ran into a Southern Oregon University (SOU) graduate with whom I had worked



Bedbugs are parasitic insects that prefer to feed on human blood.

on a project concerning insect attraction to pears. He is now pursuing a higher degree in entomology and is working on bedbugs. Although bedbugs were not his first choice, that is where the research dollars are and he was happy to oblige. He is looking for the chemical signal that attracts bedbugs to humans. Bedbugs are definitely attracted by body heat, but as they are fairly specific to humans, there is probably a chemical that humans give off that acts as a chemical cue. His initial studies, using sweaty socks among other things, indicated the existence of such

an attractant, which chemical ecologists refer to as a kairomone. In the next phase of his research he will try to isolate the kairomone so it can then be used to monitor or aid in control of bedbugs.

As to my own encounters with bedbugs, I have had bedbugs brought into the office on a few occasions, but not really that many. When I get bedbugs they are usually in pretty bad shape, victims of insecticide spray or floating in rubbing alcohol, but I did once receive

a live virgin female bedbug. If you are wondering how I knew it was a virgin female, well, the sex life of the bedbug is rather odd, to say the least. The male bedbug does not mate in the normal manner but pierces the female's abdomen to deposit his sperm. This traumatic insemination leaves a scar and my female did not have that telltale scar. Also, despite feeding her twice, she never laid any eggs.

I dubbed her "Betsy." When I fed her, I discovered that her bite was absolutely painless and I had no adverse reaction whatsoever. However, some people do



Hungry bedbug finds a victim.

react—out of 900 volunteers who were subjected to bedbug feeding during a study at Orkin's Training Center, less than five percent had a reaction, but there is also evidence that the more often you are subjected to bedbug feeding, the more likely that a reaction will occur. The bedbug needs a blood meal before each molt and then prior to laying eggs. Therefore, an individual bedbug needs to feed on a person multiple times throughout its life. The first time I fed Betsy, I had a little cage on my wrist and watched intently for quite awhile, but nothing happened. I finally started doing something else, and by the time I checked on her again she was half engorged. She lived close to a year and I do have some lingering regret about her death from starvation. In retrospect, I should have fed her more often and I definitely should not have named her.

I am surprised at the number of people I encounter who seem truly fearful that their homes could be infested by bedbugs. Admittedly, it is an alarming prospect not just because bedbugs are difficult to get rid of, but also because they have traditionally been associated with "unclean" environments. That stigma has diminished somewhat now that bedbugs have been discovered in penthouses as well as flophouses. However, as long as the bedbug population is on the rise, research to understand our parasitic bedmate will continue as we try to return to a time when "don't let the bedbugs bite" was said only in jest.

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