Bed Bugs Meet the Law, Forum X

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The two sides of the coin in the human and bed bug narrative
The 5 stage of acceptance…

1. Denial
2. Anger
3. Bargaining
4. Depression
5. Acceptance

…of bed bugs

Confirmation bias appears when bed bugs are discovered
Bed Bugs are a building problem, **not** a personal problem!!!!
Description

- **Shape:** Broadly oval (males are a little narrower than females)
- **Color:** Brown to tan
- **Size:** Lentil, apple, or melon seed
- **Feeding:** Piercing sucking mouthparts (bed bugs do not “bite”!)

Bed bug feeding

Beak (a portable straw)

Adult female

Un-engorged adult

Engorged adult
Body Form

Nymph

Adult male

adult female

Pin head

Newly hatched nymphs and egg cases
Bed bugs commute
Repetitive behavior!

Clustering behavior in a refuge

Bed/seat

Refuge

Night stand with fecal spots
Seven Life Stages

Eggs
5 nymph stages called “instars”
Adults
Three species in Connecticut

Eastern bat bug *Cimex adjunctus* Barber

Common bed bug *Cimex lectularius* L.

Chimney swift bug *Cimexopsis nyctalis* List.
Harlan population, a laboratory line that is unafraid of host presence

Wild population, displaying the freeze and slow scatter behavior, as fear response to host presence
Predation

*P. americana* and *C. lectularius* colonies together in an arena

*P. americana* inside tube

*Eaten C. lectularius*

*C. lectularius refuge*

*Peeking*
Reproduction

- Egg production
  - Ridge cross: 1279
  - Harlan cross: 1469
  - Hybrid vigor: 529
  - Harlan control: 398
  - Ridge control: 200

Female egg guarding

- Fertile organized eggs
- Egg hiding

Dead females following cross breeding failure

Randomly placed infertile eggs from X-mating of a male from New Mexico with Vermont females
Stacking
Fifth instar mating

Female isolated in test tube as a 5\textsuperscript{th} instar, molted, and engendered 4 live nymphs

Fifth instar shed skin

Nymphs

Male mating with a 5\textsuperscript{th} instar female

Live nymph engendered from a 5\textsuperscript{th} instar mating
This second instar nymph had clung to the ventrad of a female and had mutually fed with her. She was then mated and isolated for egg laying behavior tests. The 2nd instar nymph was later found with its younger 1st instar siblings.
Sibling 1\textsuperscript{st} instar nymphs with no access to a host. One on left had fed on an older nymph that had been given a blood meal.

Live 1\textsuperscript{st} instar nymph after feeding on an adult.
Recently fed 1st instar nymph inside the exuviae (shed skin) of an older nymph
Aggregation fidelity toward refuge

Chemistry rich refuge

A sick insect walking away after defecating on a host
Never depend on skin lesions for bed bug identification. Find the insect!
Management

• Communicate and Cooperate!
• Don’t Panic, remain calm. Bed bugs are easy to kill if caught early.
• Identification services.
• Have Pest Management Professional (PMP) on call.
• Declare property bed bug proactive.
• Encourage early reporting. Tenants are landlords eyes and ears.
  Don’t shoot the messenger!
• Have routine preemptive inspection.
• Provide passive education. Give tenants bed bug information at contract signing.
• Avoid “men in white coats” scenarios.
• Rapid response stops tenants from racing out and buying over the counter pesticides.
Tools

- Dryer. Treat with high heat for 20 minutes
- Vacuum cleaner. Cracks and crevices every 10 days
- Trained staff
- Dogs
- Climbups®
- Change of clothes for staff, if needed
- Spray bottle of soapy water
- Mattress & box spring encasements
- Bed bug resistant furniture
- Metal bed frames
- White sheets
- Caulk cracks and crevices
- KEEP DETAILED RECORDS!

Climbup® bed bug interceptors

Ellie and Christi