

Bed Bugs Meet the Law, Forum X



CAES

The Connecticut Agricultural Experiment Station

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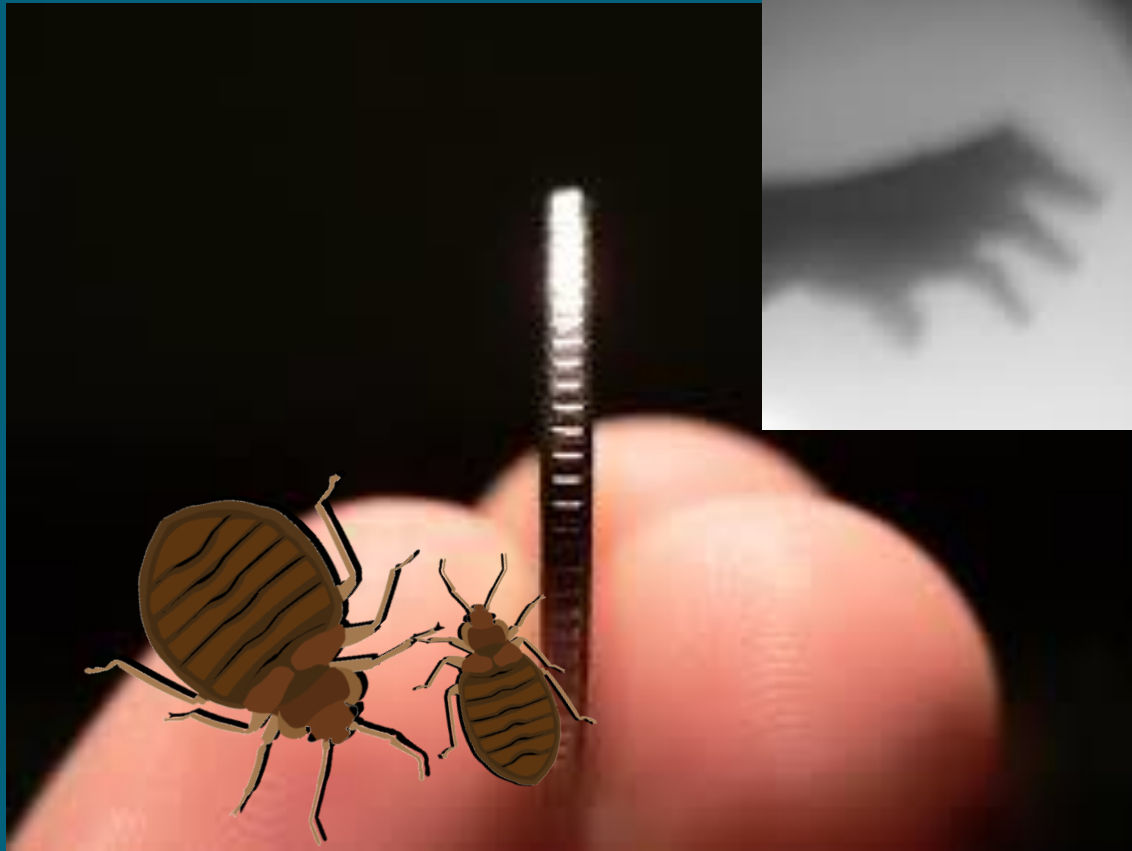


Senator Andres Ayala



Representative Larry Butler

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



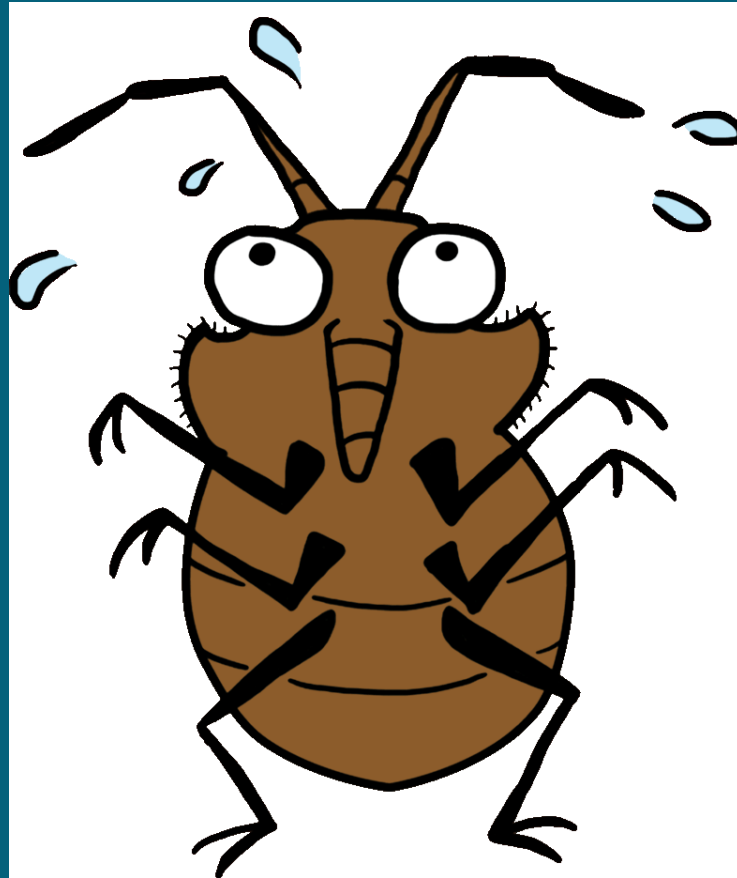
...of bed bugs

Confirmation bias appears when bed bugs are discovered

Bed Bugs are a building problem, **not** a personal problem!!!!



Clipart design



Design by Katherine Dugas (CAES)

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

Nymph



Body Form



Adult female



Adult male



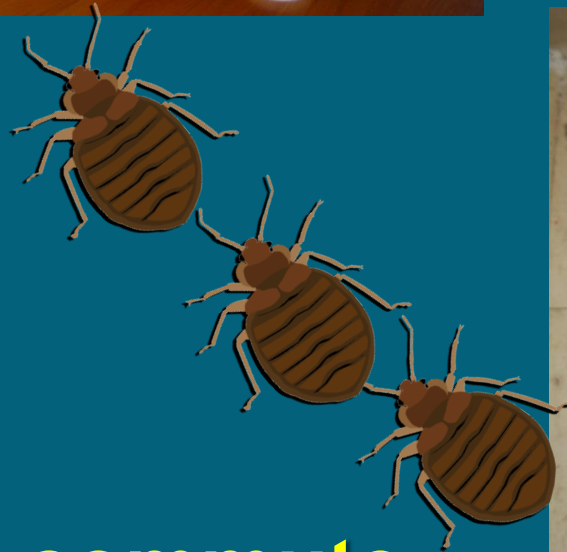
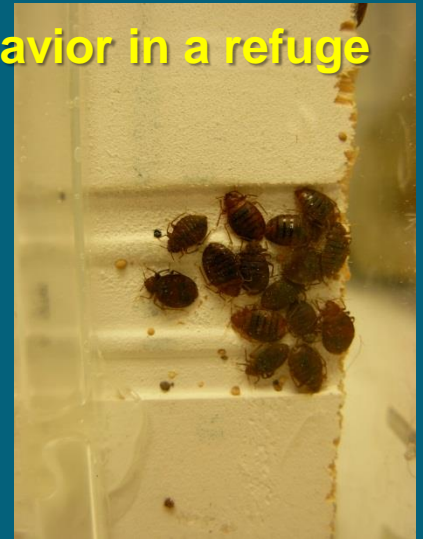
Pin head

Newly hatched nymphs and egg cases



Bed/seat

Clustering behavior in a refuge



Refuge

Bed bugs commute

Repetitive behavior!

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

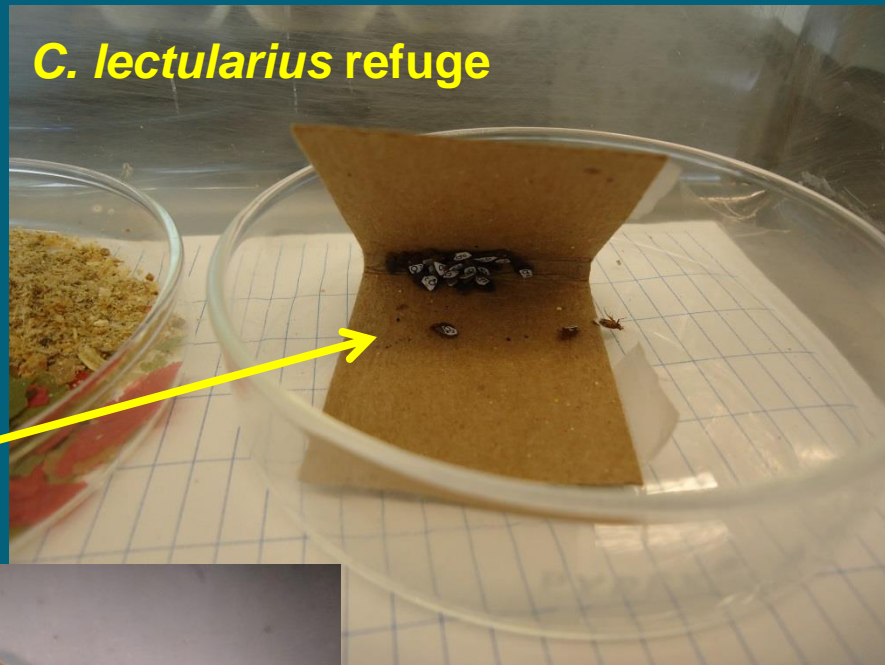


Predation

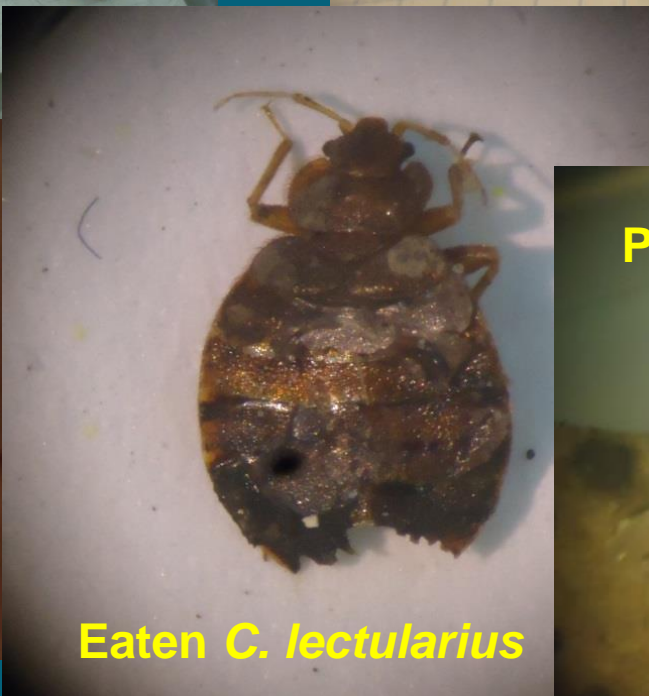
P. americana and *C. lectularius* colonies together in an arena



C. lectularius refuge



P. americana inside tube

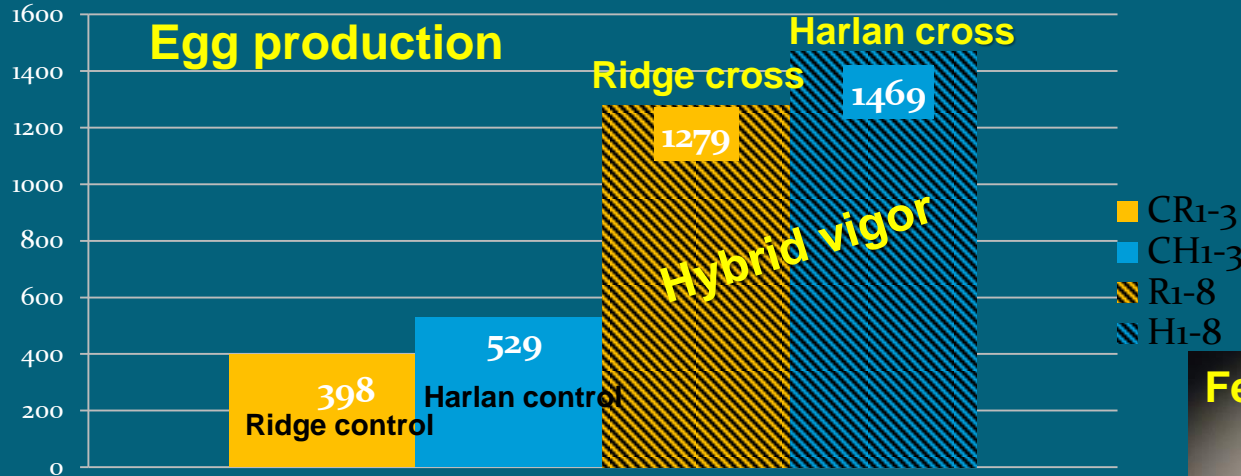


Eaten *C. lectularius*



Peeking

Reproduction



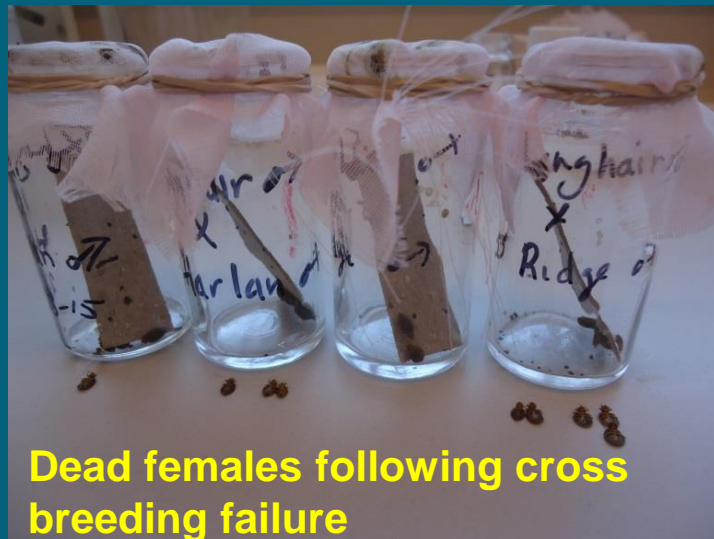
Female egg guarding



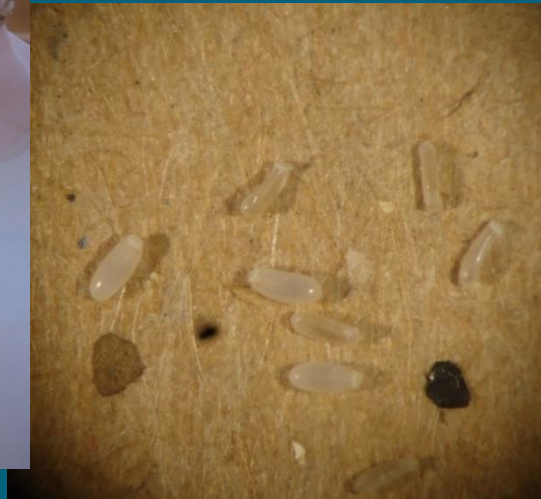
Fertile organized eggs



Egg hiding



Dead females following cross breeding failure



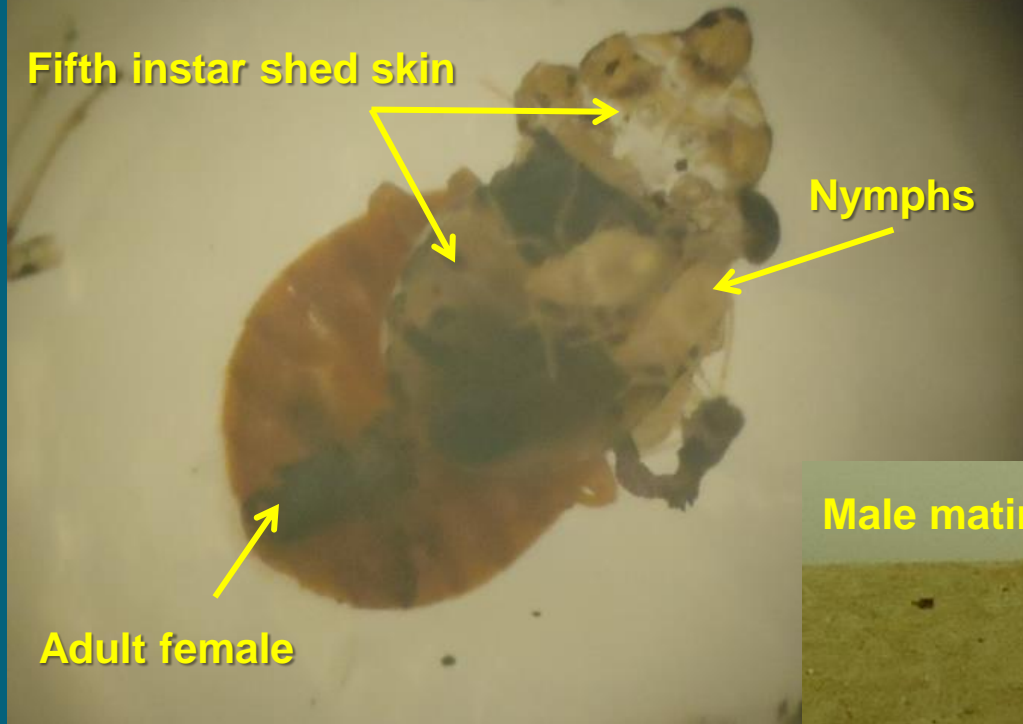
Randomly placed infertile eggs from X-mating of a male from New Mexico with Vermont females

Stacking



Fifth instar mating

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



Live nymph engendered from a 5th instar mating



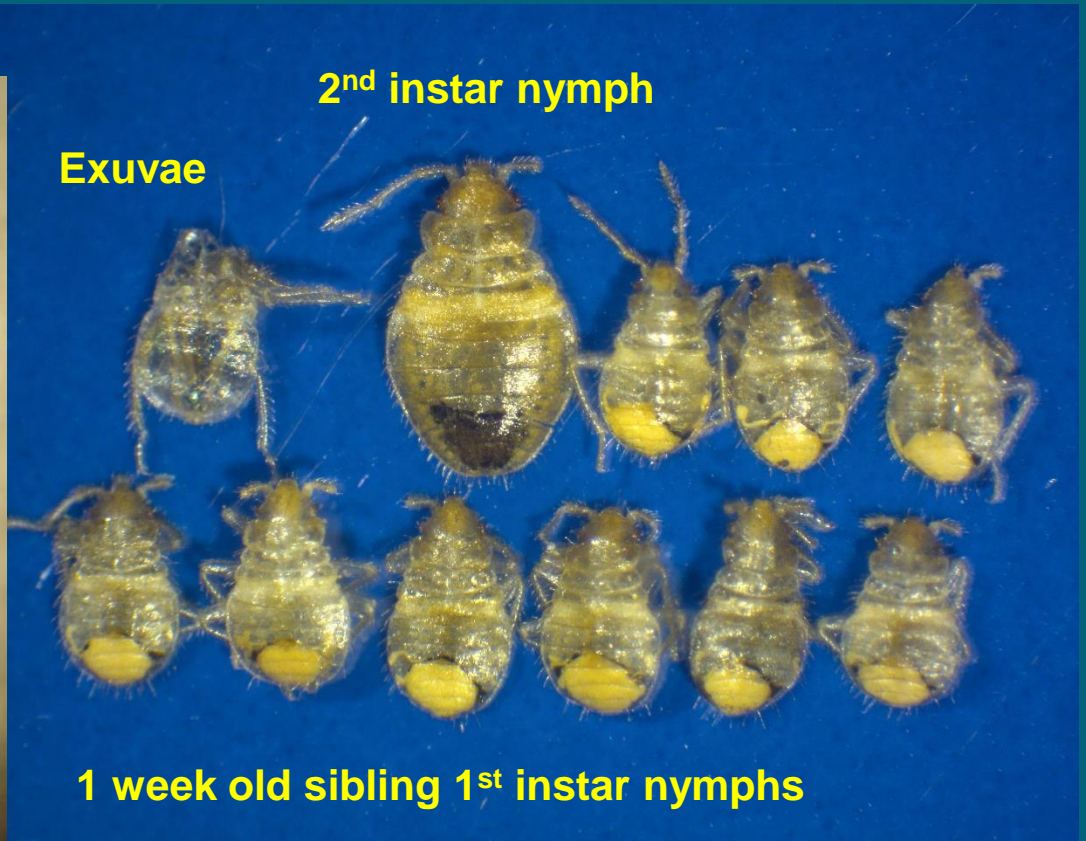
Male mating with a 5th instar female



Hitch hiking and mutual feeding



Male flipped on his back exposing a hitch hiking nymph



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.

Tapping

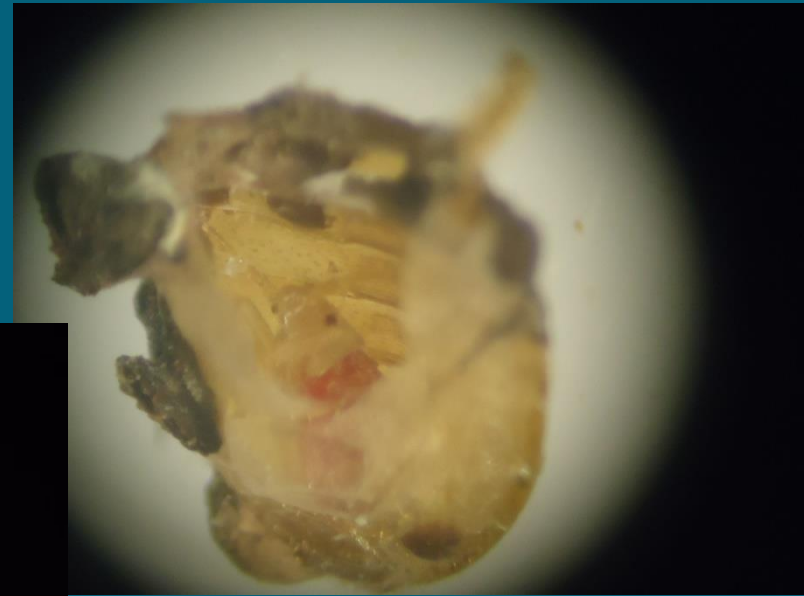


Sibling 1st instar nymphs with no access to a host. One on left had fed on an older nymph that had been given a blood meal

Live 1st instar nymph after feeding on an adult



The Refuge



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!



Amoxicillin reaction



Mosquito



Pimple



Mold



Bed bug



Thyroid

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



**KEEP
CALM
AND
BED BUGS
BEGONE**



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**Open discourse
Questions and Answers**

