

BED BUGS

THE PROBLEM AND WHAT TO DO ABOUT IT



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BED BUGS A LITTLE HISTORY

- It is likely that bed bugs have co-existed with, and fed upon man as long as man has existed.
- Probably they began their association as parasites of other animals and, as man and other animals began co-habiting shelters, they found man to also be a suitable host.

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WHY NOW

BED BUGS A LITTLE HISTORY

- Bed bugs are small and wingless.
- They exhibit gradual metamorphosis (egg, five nymphal stages and the adult).
- Four related species in the urban environment.
- In decreasing importance to us, they are, **human bed bug**, **bat bug**, **swift bug** and **swallow bug**.
- There are, however, at least three species of "human bed bugs".
- All are **nest parasites**. They live **off** of the host, but feed **on** the host.
- **The last item is important in considering control measures.**



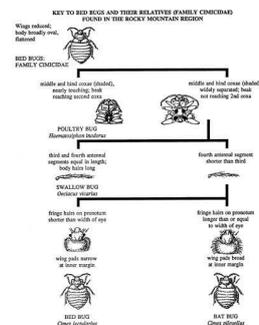
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BED BUGS A LITTLE HISTORY

- Newly hatched bed bugs are about the size of a poppy seed.
- Once fully grown, the adult will be about 1/4 to 3/8" long.
- Under favorable conditions a female will lay 3 or 4 eggs per day, for a total of about 200 eggs in her lifetime.
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- In one year there may be about 4 generations.
- They appear nearly white after molting and turn light brown to mahogany as each nymphal stage ages.



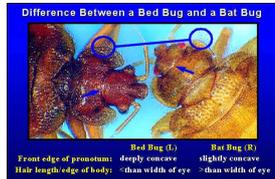
KEY TO COMMON BED BUGS



BED BUGS & BAT BUGS

HOW TO TELL THEM APART

- The eyes of the bed bug protrude a bit more than those of the bat bug.
- The hairs on the edge of the pronotum of the bat bug are longer than the width of its eye.
- The front edge of the pronotum of the bed bug is deeply concave, compared to that of the bat bug.



SWALLOW BUGS AND SWIFT BUGS

- In the urban environment, neither swallow bugs nor swift bugs are the problem that they once were.
- Regarding chimney swifts, most chimneys are capped.
- Regarding swallows, most structures are not prone to swallow nest establishment.
- **If either pest were encountered, control would be the same as for bat bugs.**

BED BUGS, BAT BUGS & BIRD BUGS

THEIR MEDICAL IMPORTANCE

- Outside of the fact that the thought of them feeding upon us while we sleep is revolting,
 - So far as we know, they do not transmit diseases to man!
 - Their bites may cause allergic reactions to some people.
 - There is a slight possibility of anaphylactic shock.
 - Most feeding happens in the pre-dawn hours – 4 or 5 AM.

BAT BUGS

Exclusion – MAYBE!

- Remember – when you are dealing with bat bugs, you must deal with two problems – bats and bat bugs.
- The problem is that bats are beneficial animals. They are pests only when they are in the wrong place such as in our attics.
- If they are established in a structure and you kill the adults, or completely exclude them from that structure between March and September, you will kill the young.
- At the very least that is undesirable. If they happen to be members of an endangered species, it is illegal!

The Other Health Issues

- Stress (after an infestation)
 - Medical bills from misdiagnosis
 - Throwing out all belongings
 - Moving
 - Destruction of self-image
 - Legal action
- Stress (no infestation)
 - Waking family members in the middle of the night to check them for bugs
 - Getting up at night to pull out the furnace and look for bugs
 - Moving, moving, moving



This slide courtesy of Dr. Dini Miller
Virginia Polytechnical Institute

Bed Bug Bites

- Bed bugs are not known to transmit disease
- Bite reactions can be alarming
 - Emergency room visits
 - Pictures posted on the web
- Different people react very differently to bed bug bites



This slide courtesy of Dr. Dini Miller
Virginia Polytechnical Institute

CONTROL MEASURES

- Range from exclusion (may not be legal or practical),
- Quarantine of luggage or furniture,
- Thorough inspection, heat, pesticide application
- or, perhaps --

CONTROL MEASURES



CONTROL MEASURES

- When considering the human bed bug, there is little that we can do, as PMPs, to exclude them, or prevent them.
- We don't get called until our customers realize that they have them (as in the case of a school, hotel or motel), or have brought them home (as in the case of a traveler returning home).
- Therefore, we are usually acting in a corrective, rather than a preventive mode.

CONTROL OF BED BUGS

- Remember that bed bugs are nest parasites; they are going to nest in close proximity to where humans spend most of their time, when not on the move.
- That will generally be where humans sleep.
- It may also be around chairs and couches (particularly upholstered ones) where people may sit or rest for extended periods of time.
- This doesn't just mean furniture! It includes carelessly discarded clothing or bedding.

Locations At Great Risk

- Homes, Apartments & Public Housing
- Hotels & Motels
- Dormitories & Student lockers
- Nursing Centers

Locations at Lesser Risk But Still of Concern

- Club and gymnasium locker rooms
- Planes, trains, busses and automobiles
- Theatres

CONTROL OF BED BUGS

There are many ideas concerning the proper method of dealing with bed bugs –

some good and some not so good!

For your own peace of mind when traveling, make a habit of this:

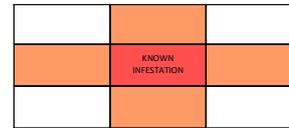
- Immediately upon entering a hotel room, place your luggage in the bathtub or shower stall.
- Carefully inspect the luggage rack, especially at the wooden or metal joints and where the fabric straps wrap around the wood or metal frame.
- Turn down the bed coverings, corners of the sheets and turn back the pillow case. Search for dark, pinhead sized stains or even whitish to mahogany-colored insects.
- If the headboard is attached to the wall (nowadays, many are) search carefully around the edges of the headboard where it contacts the wall. Many can easily be removed for inspection of the back edges.
- If possible, note the wall electrical receptacles for bed bugs or tell-tale spots.
- Open and carefully inspect the nightstand and other furniture drawers for the tell-tale signs. Lift and look beneath table lamps, particularly on the nightstands.
- **If you see anything at all of a suspicious nature, ask for another room, at least three rooms away. If offered a room on another floor, make certain that it is not directly above or beneath the room that you have rejected.**

Where Do We Begin?

- Thorough inspection, although time-consuming, is absolutely essential!

WHAT TO INSPECT?

ROOMS TO BE TREATED



all rooms located above, below or behind the known infestation must, at the very least, be inspected.

MUST-DO POINTS OF INSPECTION

Be sure to remove the mattress and box springs from the bed!

Dismantle the bed frames, empty and turn over any nightstands and empty any "book-case" headboards.

The vast majority of hotel rooms now are equipped with bed headboards which are simply hung on the walls and are easily removed. Do so!

Don't overlook all joints, cracks and crevices of the bed frame and night stands, as well as the back sides, insides and bottom of same.

MUST-DO POINTS OF INSPECTION

Thoroughly vacuum all bedding, carpeting, drapes, curtains and wall hangings.

Pay particular attention to mattress tufts, folds, edges and buttons, carpet edges and drapery and curtain pleats.

Treat everything except the mattress with a properly labeled insecticide.

Don't forget to treat the back side of all wall hangings.

MUST-DO POINTS OF INSPECTION

If any clothing or luggage from travels (where your customer probably picked up the bedbugs) have been put away in drawers or closets, they will have to be removed and, at the very least, inspected.

Proceed with all structural cracks, crevices and wall voids.

Don't overlook baseboards, window and door frames, crown molding, behind peeling wall paper and picture frames.

Consult with the customer regarding possibly valuable framed art or objects. Inspect and remove them if practical. When treating within electrical receptacles and switches, be certain to use an oil-based product!





CONTROL OF BED BUGS

CONTROL OF BED BUGS IS EXTREMELY
COSTLY, INTRICATE AND TIME-CONSUMING.

CONTROL OF BED BUGS

- This is not a job for the janitor, maintenance personnel or building superintendent.
- This is a job for only the most highly trained pest management technician of a reputable firm. Good ole boy "Bubba" has no place here!
- Check references carefully. The National Pest Management Association and state pest management associations are good places to start.
- Follow up with the Better Business Bureau, Angie's List or any other similar sources.

Dr. Harold Harlan states:

- "Control efforts most often fail because it is nearly impossible to find every bed bug in a room, insects are often identified as bed bugs incorrectly, treatments are often ineffective because the bugs are inaccessible, and bed bugs have developed resistance to certain insecticides."

CONTROL OF BED BUGS

- Pesticide application must be carefully targeted.
- Just as critical, is your selection of pesticides. Remember, about 10% of the world's human population is allergic to natural pyrethrum. It would be wise to ask your customer if any residents in the household have any known allergies to pesticides and if they do, what are they. Any of the synthetic pyrethroids, properly labeled, are probably the best to use.
- Very serious pesticide resistance issues are cropping up across the nation.

CONTROL OF BED BUGS

Mattress Encasements



Pillow Encasements



CONTROL OF BED BUGS

- "The clothes dryer is the number-one line of defense. Clutter removal also helps by removing bed bug hiding places,"

According to Dr. Dini Miller of Virginia Tech University

- This, and laundering in the hottest water available, commensurate with fabric care instructions on the bedding items.
- All used or soiled clothing and bedding should be placed in plastic bags, tightly sealed and removed to the laundry room.
- Do not reuse the plastic bags to return clean laundry to the rooms or linen storage. **They may be re-used to move more soiled linen to the laundry.**

CONTROL OF BED BUGS

- Some people use steam extraction – like carpet cleaning. Although slow, this probably works, **if your technique is thorough enough.**
- People have attempted cold, or freezing operations. **They don't work!**
- A successfully emerging technique is the use of high temperatures, contained within a room or entire structure. A number of pest management firms are adopting this method, with good results.
- Some hotels and persons have gone so far as to simply discard or sell the furniture and bedding – perhaps in a garage sale – and let someone else worry about it. **That bargain purchase becomes not so much of a bargain!**

CONTROL BY HEAT

• Temperature/ Exposure Time Required to Kill All Bed Bug Stages

- 118°F (48°C) 90 minutes
- 122°F (50°C) < 1 minute
- 113°F (45°C) 7 hours

- For **steam treatments** surface temperatures should reach 160 - 180°F (71 - 82°C) to ensure that surface temperatures rapidly exceed 122°F (50°C).

• Reference: 2010. Kells, S.A. Control of Bed Bugs in Residences: Information for Pest Control Companies. University of Minnesota Fact Sheet, St. Paul, MN. www.bedbugs.umn.edu

National Pest Management Association

Best Management Practices For Bed Bugs

-Consumer Edition-

Go to:

www.npma.org

www.bedbugbmps.org

On that page find "Consumer Friendly Version"

