



Bed Bugs in Sensitive Environments

Nebraska Extension



Since 2000, bed bugs have become a problem in the U.S. and other countries

Why?

- ❖ Today's bed bugs are resistant to insecticides
- ❖ People travel more and move bed bugs from place to place
- ❖ Infestations are not identified early when easiest to control
- ❖ Established infestations are hard to treat and are expensive



Low income families and individuals most at risk

- ❖ High density housing
 - Apartment dwellers
 - Refugees/immigrants
 - Subsidized housing
- ❖ Homeless shelters and halfway houses
- ❖ Elderly



Problem in high density housing is related to the cost of control

- ❖ Landlords and property managers may not be willing to pay for eradication
 - Monthly sprays will not control bed bugs or prevent them from getting into units
- ❖ OTC products are pyrethroids and do not work very well
- ❖ Some families are living with bed bugs and cannot afford treatments



Good housekeeping/cleanliness will not prevent bed bugs

- ❖ But, clutter provides bed bug harborage
 - More hiding places means more bed bugs
- ❖ Clutter may also prevent treatments from being effective



Photo: University of Nebraska-Lincoln



Bed bugs are blood feeders

- ❖ Adults are $\frac{1}{4}$ -inch long
- ❖ Scab colored
- ❖ Flat, unless they have recently fed
- ❖ Prefer human blood, but will also feed on pets



Photo: Nebraska Extension in Lancaster County



Hungry bugs most active at night

- ❖ Activity period usually begins after people go to bed
 - Exhaled CO_2 triggers activity
 - Bed bugs sense and track body heat
 - Detect human smell
 - ✓ Bed bugs may hang out in dirty clothes/hamper
- ❖ Early morning, bed bugs return to hiding places



How fast populations grow depends on food and temperature

- ❖ Females lay tiny eggs
 - Hatch in ~ 1 week
- ❖ Each stage must feed on blood to develop
 - Even after feeding, first stage bed bug is small
- ❖ After feeding, each stage rests for about a week between feedings:
 - Digest blood and molt



Egg → nymph → adult → egg = ~ 5-6 weeks

Photo: Nebraska Extension in Lancaster County



Bed bug signs: look for black fecal spots near sleeping areas



Photo: Nebraska Extension in Lancaster County

Edge of mattress



Photo: Nebraska Extension in Lancaster County

Inside box springs



Signs of a bad infestation on a mattress



Photo: University of Nebraska-Lincoln

Ticking of box springs

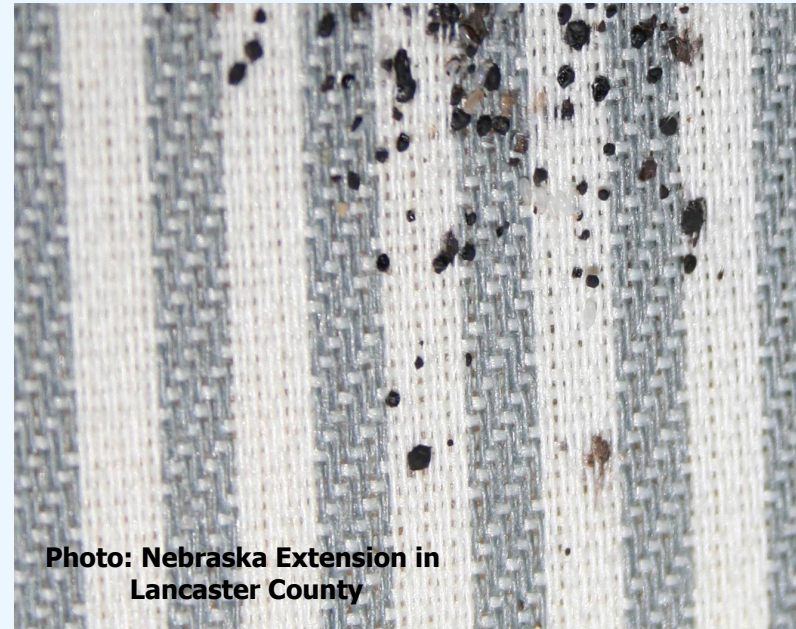


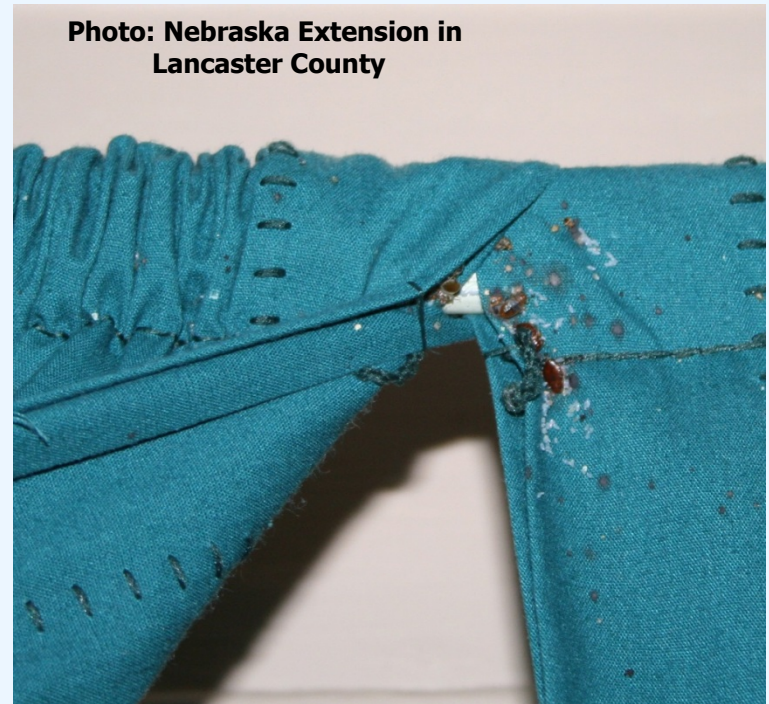
Photo: Nebraska Extension in Lancaster County



Most Bed Bugs Will be Found Near Where People Sleep or Rest

❖ Other hiding places may include:

- Curtains
- Door hinges
- Behind picture frames
- Baseboard cracks and crevices
- Upholstered furniture



Bed Bug Bites

- ❖ Age 12-65: ~25% do not react to bite
 - They aren't bothered by bites
- ❖ Elderly (65 + yrs): ~42% don't react
- ❖ Bed bugs feed only on exposed skin
 - Bed bugs don't crawl under or bite through clothing
- ❖ Bites may lined up in a row, singly or more random
 - Any part of the body, except the scalp



Bite reactions are variable and specific to individuals

- ❖ Red spots that don't itch
- ❖ Inflamed itchy bites
- ❖ Rash
- ❖ Blisters
- ❖ Hives



Inflamed, itchy bites

Photo: Nebraska Extension - Lancaster County



Good news: bed bugs don't transmit diseases

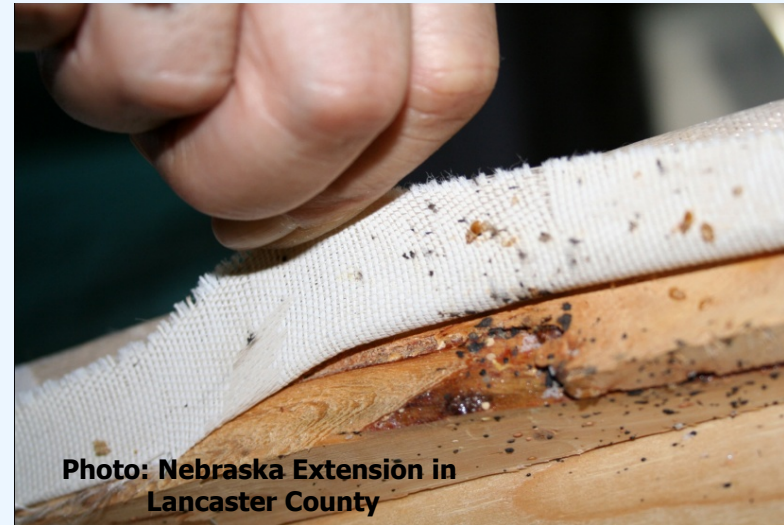
- ❖ Secondary infections
- ❖ Asthma (unlikely, but reported)
- ❖ Psychological issues
 - Insomnia
 - Anxiety
 - Stress
 - Emotional distress



Infestation vs. Introduction

❖ "Infestation"--where people sleep nearly every night or regularly

- Box springs, mattress, and other places near where people sleep
- Sofas and upholstered furniture



With unlimited food → bed bug populations increase



What's an Introduction?

- ❖ A bed bug “dropped” by a person who spends time in an infested place
 - Locations:
 - ✓ Schools, childcare facilities, workplaces, doctor's offices.
 - Kids coming to school or childcare center
 - Adults going to work or other locations
 - People don't sleep at night in schools and childcare facilities. If the bugs can't feed, they can't multiply.
 - Single bed bugs are scattered in different locations

Insecticides are rarely helpful in these locations and should be avoided



How do bed bugs get in schools, childcare centers and other places?

- ❖ From people carrying bugs on their clothing or in other items (backpacks, books, diaper bags)
 - Could be in lockers, coat racks, under desks
 - Individual bugs, not breeding populations
- ❖ Employees (with infestations at home) bring them to work



Possible actions....

- ❖ Bag or put students' personal belongings, clothing, purses, backpacks in sealed plastic tote until they leave for home
- ❖ Isolate outerwear from that of others
- ❖ There is a social stigma with bed bugs so confidentiality is important



Hot and cold temps kill bed bugs

- ❖ Heat: 120° F (short time)
- ❖ Cold: 0° for 4 days

So...laundering washable items can be helpful

- ❖ Wash with detergent in hot water (140° F) AND/OR
- ❖ Dry in a medium-hot dryer for 30 minutes



Canine detection

- ❖ Dogs can be specially trained to detect bed bugs
- ❖ Locate single bugs or infestations
- ❖ "Hits" should always be verified by handler or a pest control technician



Preventing Bed Bugs

- ❖ Be careful where you sleep
 - Inspect beds when you travel
 - Behind headboard
 - ✓ Remove from wall
 - Remove bedding, look for fecal spots
 - Don't put luggage/computer cases or purses on the floor



Preventing Bed Bugs at Home



Photo: University of
Nebraska–Lincoln

- ❖ After traveling:
 - Inspect clothing, toiletries or luggage before coming inside
 - Or, seal clothing in plastic bags and later launder or run through hot dryer
 - Use duffel bags (can be placed in a dryer)



Avoid used furniture, even if it looks good



Be aware of overnight visitors staying in your home

- ❖ Recent travelers
- ❖ Apartment dwellers or those who live in group homes
 - College kids



Treatments

- ❖ Bed bugs are resistant to over-the-counter liquid treatments
 - Foggers do not work!
 - Most insecticides do not kill bed bugs after they dry
- ❖ Best to hire an experienced professional to evaluate the situation and recommend action
 - Professional-use insecticides more effective than OTC
 - Professionals have proper application equipment
 - Professionals licensed to apply them safely



In Conclusion:

- ❖ Fear of bed bugs may result in unnecessary treatments in locations like schools and childcare facilities
- ❖ Experts have rarely, if ever, found a bed bug infestation in a school, daytime daycare facility or other places where no one sleeps at night



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