

# Don't Let the Bed Bugs Bite: Prevention and Treatment of Bed Bugs in Public Libraries

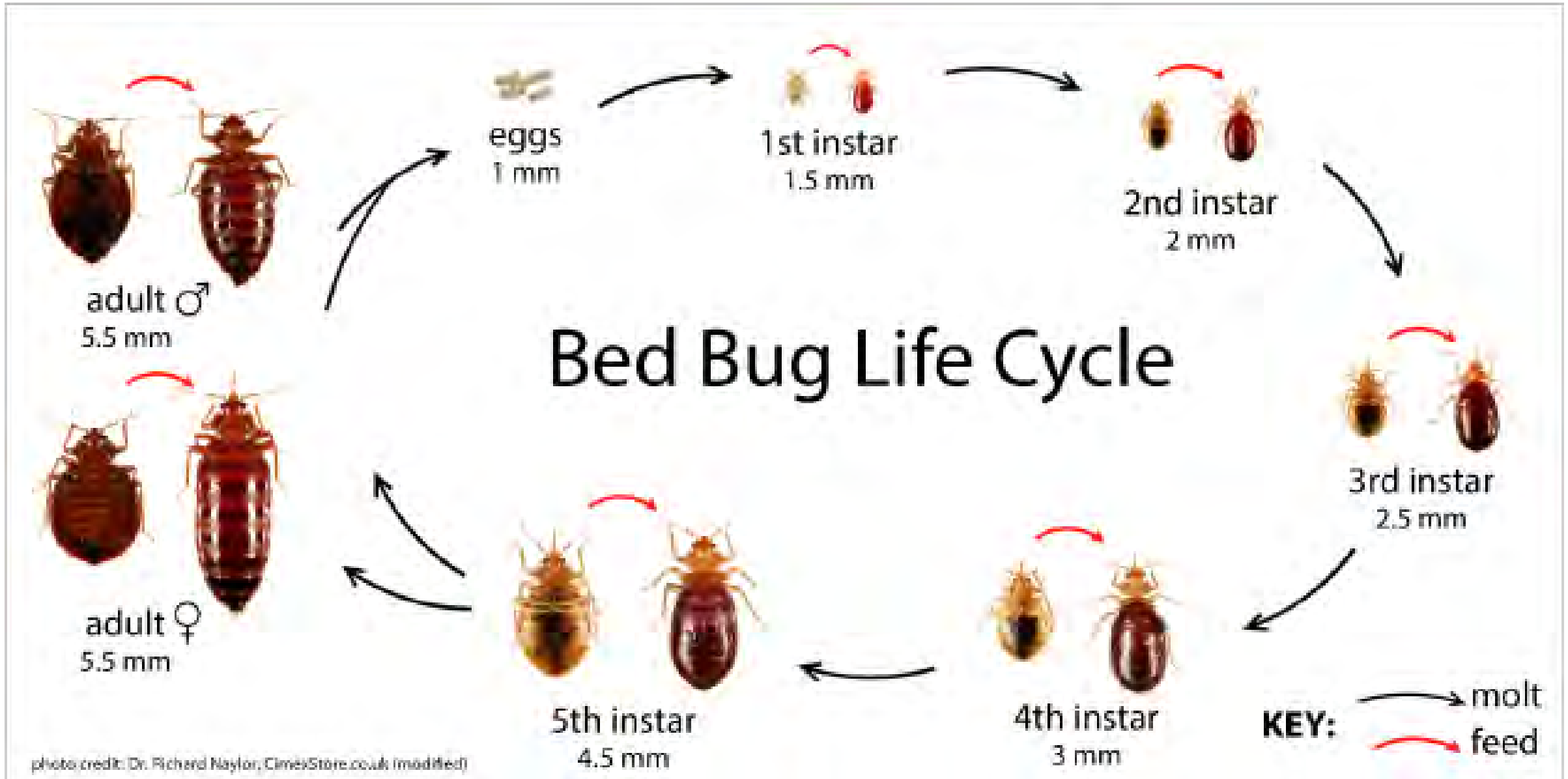
October 28, 2015



# What we will be covering today

- Meet the Bed Bug!
- Why do we worry about bed bugs?
- A brief history of bed bugs (and why they're back)
- Wichita Public Library's story
- The 6 stages of a bed bug introduction
- Furniture issues
- Facility issues & preventative measures
- Policy questions
- Talking points for the media and public

# Meet *Cimex lectularius* (a.k.a., the common bed bug)

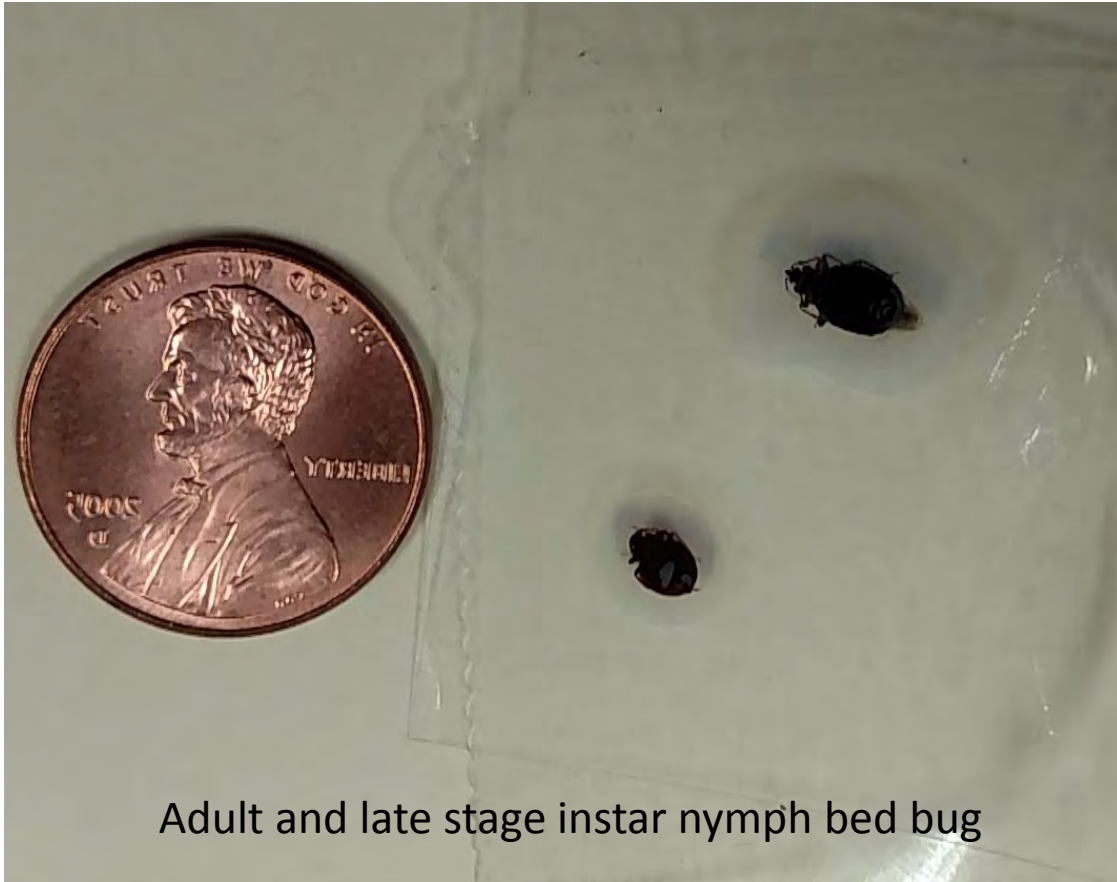


# The Bed Bug - Apple Seed Comparison

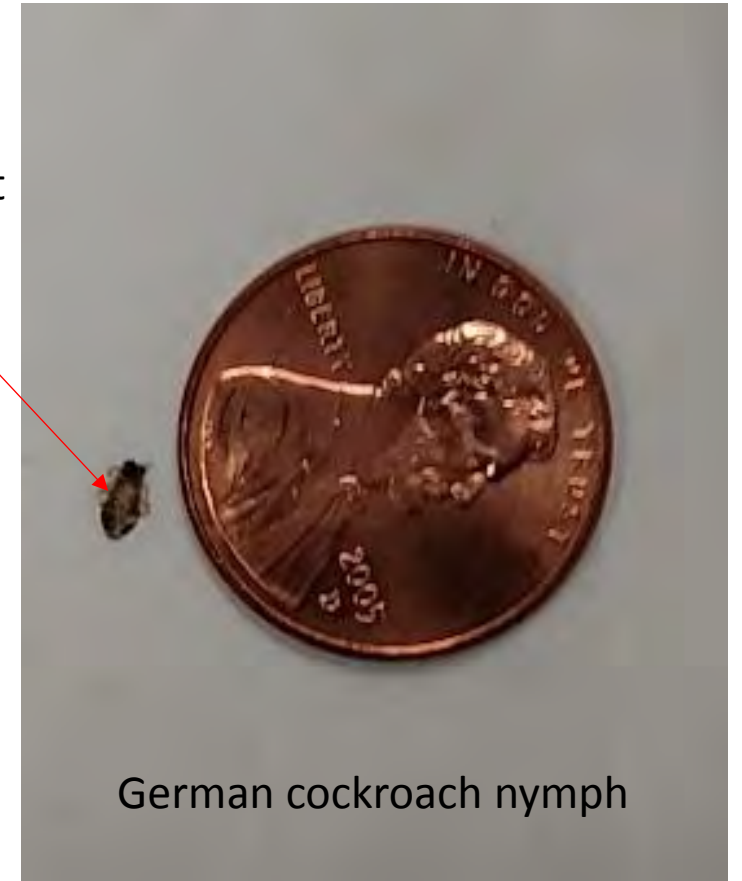




# The Bed Bug - Baby German Cockroach Comparison



Lighter beige spot



When determining whether you are looking at a German cockroach nymph or a small bed bug, there is one thing to look for:

- Is there a lighter spot in the middle of the abdomen?

If the answer is yes, you are looking at a baby German cockroach.

# Why worry about bed bugs?

Six months after the introduction of one mated, female bed bug into a location, an infestation scenario could look something like this:

- 121,409 nymphs
- 7,848 adults
- 169,490 bites

Other information to know:

- Female bed bugs will lay between one and five eggs a day.
- Eggs hatch in 6-15 days, depending on the temperature.
- Each developmental stage lasts about 1 week.
- Six weeks after hatching, a female could be ready to mate and start the cycle again.

# The Bugs Without Borders Survey (2015)



Every other year, the National Pest Management Association, in conjunction with the University of Kentucky, surveys pest management professionals regarding their experiences with bed bugs over the previous year. These are the results of the 2015 survey (data from 2014).

Not shown: 17% of pest management professionals worked with libraries in 2014 to combat bed bugs. This is up from 12% in the 2013 survey.

More information can be found at:  
<http://www.pestworld.org/>

# A brief history of bed bugs – and why they're back

- Bed bugs have been around for hundreds of thousands of years.
- Bed bug fossils have been found at a 3,550-year old site in Egypt.
- References to bed bugs appear in print in the Christian *Apocryphal New Testament* (200-300 AD), the Jewish *Talmud* (200-500 CE), and the Islamic *Hadith* (600 CE).
- Early pest control methods included using bean leaves around pillows and beds.
- The first U. S. patent for a bed bug trap was issued in 1790.
- Post-World War II, with the introduction of DDT as a common household pesticide, things changed.
- In 1972, the use of DDT was banned in the United States.
- By 2010, bed bugs were back to making headlines in the news.



# Wichita Public Library's Story



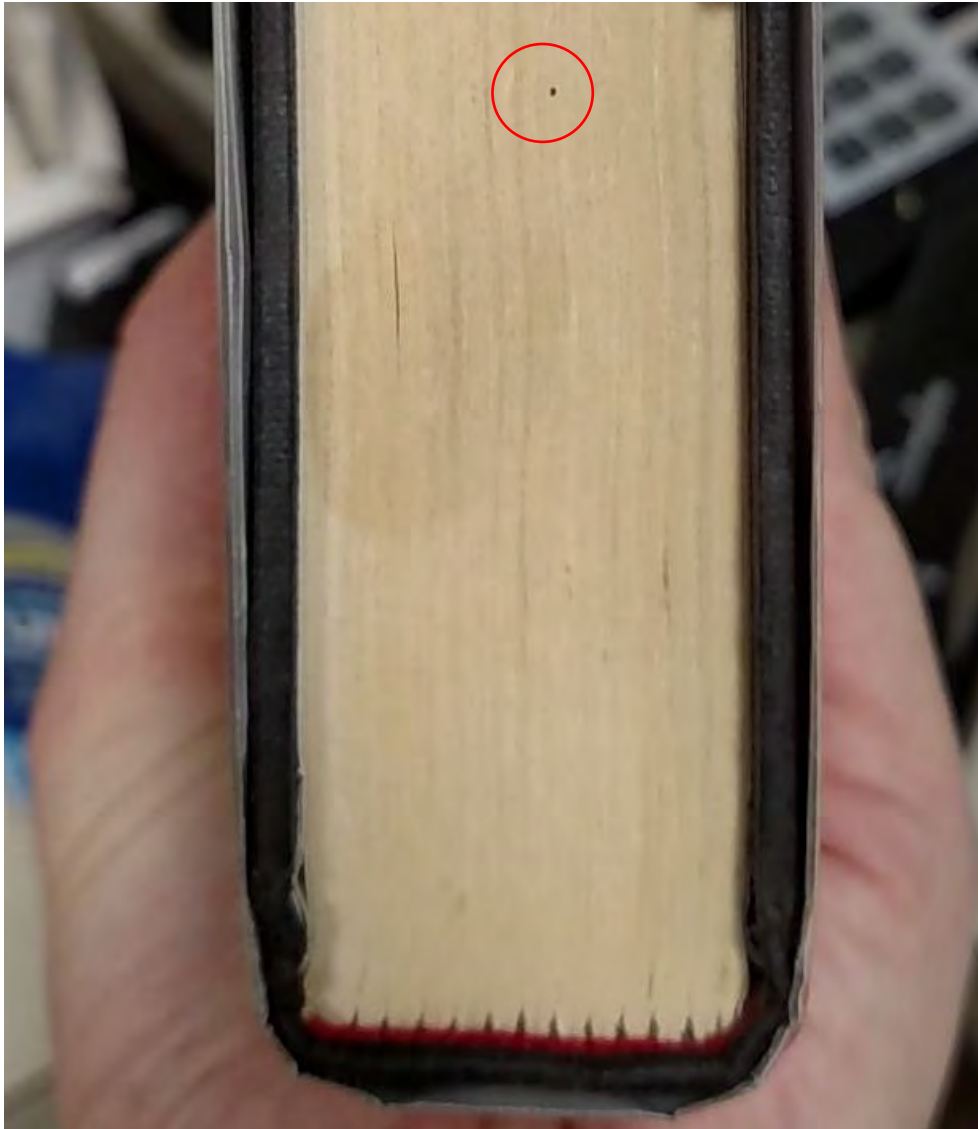
# The cast of characters

- **Frontline staff:** generally the ones to find bed bugs or bug damage while working with materials
- **The Pest Management Coordinator** (or group of coordinators): responsible for leading the library's response to pest introductions
- **Senior management:** responsible for policy decisions and procedural signoff

# The 6 steps of a bed bug introduction

1. Identification of a bed bug or bug damage
2. Quarantine
3. Inspection
4. Treatment
5. Follow-up with customer (including suspension of privileges, if applicable)
6. Reinstatement of privileges

# Identification: Examples of bed bug damage to materials



# Identification: under the cover of a “single dot” book



You may only see a single dot on the outside of the book...

...but on the inside, you will see that the book really *has* been around bed bugs.





# Identification: further examples of bed bug damage to materials



Identification: the prime bed bug hiding spot



# Identification: further examples of bed bug damage



It is also not uncommon for bed bugs to be caught inside of a book, and to be squished inside either the front or back cover.

# Identification: further examples of bed bug damage



It is important to look underneath book jackets, as bed bugs consider it a very good place to hide. On the left, you can see the remains of a bed bug that was squished between the book and the cover. Below, you can see two dead early instar nymphs.



# Quarantine scenarios

Situations your library should be prepared to deal with include:

- Items with live bugs returned at the counter, where the bugs are discovered at the check-in counter;
- Items with live bugs returned in the book drop, possibly overnight;
- Items with damage (or dead bugs), where the damage is discovered at the check-in counter;
- Items with live bugs discovered after check in, where they have made it onto a book truck or the shelf;
- Items with damage discovered after check in, where they have made it onto a book truck or the shelf;
- Furniture found with live or dead bugs or bed bug skins.



# Quarantine Scenarios, continued

- **Live bugs:** More urgent, because the item has recently been exposed to bugs.
- **Dead bugs or damage:** questions about how long the bugs or damage has been there; may have to look at several previous borrowers; may never be able to figure out the customer with the problem.
- **Book drops:** need to quarantine everything in the book drop due to transference.
- **Book trucks:** may need to inspect everything on the cart, but only quarantine suspicious items.
- **Bookshelf:** may need to look at surrounding items, but not quarantine them – or you may need to quarantine several shelves worth of materials.

# The quarantine toolkit

Each circulation counter should have a quarantine toolkit that includes:

- Heavy duty Ziploc bags
- Airtight plastic tubs for storing and transporting bagged materials (optional)
- A spray bottle filled with isopropyl (rubbing) alcohol

You should also find an out of the way, secure spot to store materials that are in quarantine.



# The pest management coordinator's toolkit

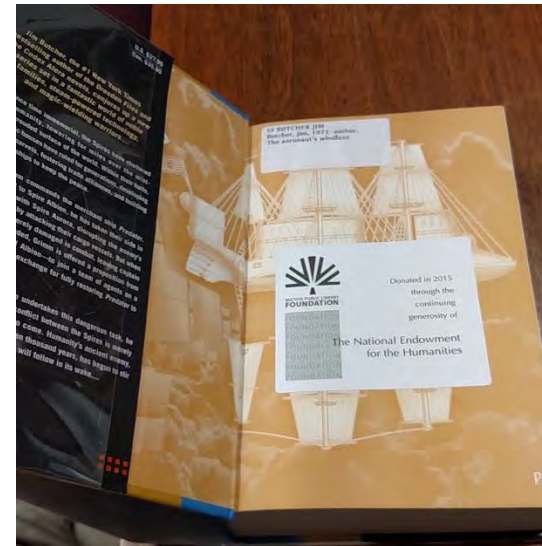
- Extra heavy duty Ziploc bags
- Extra airtight plastic tubs for storing and transporting bagged materials (optional)
- A spray bottle filled with isopropyl (rubbing) alcohol
- A LED flashlight
- A UV flashlight
- A magnifying glass
- Latex gloves
- A library card for placing quarantine holds
- Access to reports on item and patron borrowing history (if available)



# Inspection – Print materials



Step 1: Inspect page edges



Step two: look inside the front and back covers of the book



Step 3: Look under the book jacket, at both the book...



...and the cover

# Treatment options

There are four different treatment categories for bed bugs:

- Chemicals (Fumigation) – used for materials and facilities
- Chemicals (Residual) – used as a preventative measure in facilities
- Heat – used for materials and facilities
- Steam – used for furniture



# Treatment options: chemical fumigation

- There are over 300 chemicals that have been approved for treating and managing bed bugs.

- The most commonly used chemicals for fumigation are pyrethrins, an organic compound derived from Chrysanthemum flowers, and pyrethroids, a synthetic version of the same.

- Other popular pesticides include those that attack the nervous system of insects. For bed bugs, one of the most commonly mentioned fumigants (for materials, not whole buildings) is the Nuvan strip, which contain the organophosphate DDVP.

- DDVP can be extremely toxic to organisms beside bed bugs, so this chemical should be used with caution and only after consultation with your pest control company.



# Treatment options: heat

Based on studies conducted by Drs. S. A. Kells and M. J. Goblirsch, the National Pest Management Association developed best practice guidelines for pest management professionals when dealing with bed bugs. Relating to heat treatment, their recommendations for the time needed to kill all bed bug life stages, including eggs, are:

## **Internal Temperature**

**113°F (45°C)**

**118°F (48°C)**

**122°F (50°C)**

## **Time**

**7 hours**

**90 minutes**

**< 1 minute**



# Narrowing down whether a customer has a problem

- If an item is returned with bugs or damage, the pest management coordinator should:
  - Place holds on all items currently checked out to that customer and other customers at that residence;
  - Run a report of items the customer has returned in the last month, so that those items can be inspected for damage.
- If no damage is found, the pest management coordinator may wish to run a report on who else has checked that item out recently and follow the above steps for other customers.

# Wichita Public Library's Health & Safety Policy

## **CUS-001.2 Suspension of Privileges for Health and Safety Reasons**

It is the responsibility of the Wichita Public Library to maintain a healthy and clean environment for all Library users and to protect the City's investment in Library collections, equipment and property. In order to fulfill this responsibility, the Library may restrict a user's ability to borrow materials and/or to visit Library facilities when such use may jeopardize the health and cleanliness of Library facilities, collections and users.

Examples of situations where borrowing of materials may be suspended include, but are not limited to:

- Evidence that items on loan to a customer may have been returned with insects that are known to be damaging to library materials, e.g. roaches, silverfish and some types of beetles
- Evidence that items on loan to a customer may have been returned with insects that can result in pest infestations in library facilities, e.g. bed bugs or roaches

Examples of situations where access to Library facilities may be suspended include, but not be limited to:

- Customers or customer possessions with fleas or lice
- Customers with clothing that is stained with urine or feces

Should it become necessary to suspend Library privileges of a customer in order to protect Library collections, facilities or other users, notification of the suspension will be made by the person in charge of the Library in which the incident occurred. Access to facilities and borrowing will be restored when the suspended customer demonstrates that the situation that caused the loss of privileges has been remediated.

Any customer that has privileges suspended under the terms of this policy may request a re-evaluation of the suspension under the terms of the reinstatement of Library privileges policy, CUS-002.

Date: 12/18/2012

# Health & Safety Policy Questions to ask

- How many pieces of evidence will your library require before suspending a customer's privileges?
- Will your library suspend all library privileges or just borrowing privileges?
- Will you charge customers for damaged materials? Will you only charge if they damage the materials while trying to treat them themselves?
- What proof that the bed bug issue has been taken care of do you need the customer to provide you with for the suspension to be lifted?



# Contacting customers regarding an infestation in their residence

Some suggested talking points, when discussing infestations with customers:

- [The library] found [live bugs/signs of bed bugs] in items you returned recently. Have you had any issues with bugs around your house/apartment?
- If yes: Explain that the library needs to maintain the safety of the collection, facilities, and other customer's residences, so all borrowing privileges will need to be suspended.
- If no: Ask if the items in question were loaned to anyone who might have an issue? Were they carried in a bag that belonged to anyone else?
- If you believe the items in question may have been exposed elsewhere, you may choose not to suspend privileges at that time.
- If the customer is just not sure what is going on, you will probably want to suspend privileges until they provide you with a letter or receipt from a licensed pest control company that their residence has been inspected and/or treated for bed bugs.

# Contacting customers regarding an infestation in their residence

- If they try to lay the blame on the library (which they may try to do, particularly if you have had to close due to bed bugs in the past), explain that bed bugs are everywhere now: doctor's offices, hospitals, schools, colleges, hotels. Have they traveled anywhere recently? Been to the movies? Been to a doctor's appointment?
- Recommend they talk to their landlord if they are in a multifamily residence situation (i.e., apartment, duplex, condominium) -- because it could be that their neighbor has a problem that has not been treated. Bed bugs have been known to travel through air ducts, on wires in walls, and through pipes.
- Customers may react to this phone call with a variety of different emotions: anger, confusion, tears, or embarrassment. Be prepared for anything. If they are ashamed, you may want to reassure them that there is nothing to be ashamed of, and if you have other customers who are also dealing with bed bug issues, to let them know they are not alone.
- What the library would like the customer to do to have their privileges reinstated.

# Inspection - Furniture



After bed bugs are introduced into a library environment via personal belongings, clothing, or returned materials, bed bugs will do what comes most naturally to them: they will try to hide themselves in a tight, warm, dark space, close to a food source. i.e., they may try to hide in your library chairs. The arrows point to some of the more common areas bed bugs will try to hide.

## Other notes about furniture:

- If you find bed bugs in your furniture, your first instinct may be to get the piece of furniture out of the public eye as quickly as possible. **This IS NOT what should happen**, as the chair could shed bed bugs as it is being moved across the library. Instead, the chair should be quarantined in place, either by wrapping it with shrink wrap or placing it in a furniture bag. Once quarantine wrappings are in place, the chair can then be moved to the official quarantine area.
- Should you end up discarding a piece of furniture rather than treating it, you should disfigure the furniture in some way, possibly by removing its legs or spray painting an 'X' on it, to make it less desirable to passersby.

# Furniture treatment

Possible treatment options:

- Heat
- Residual chemicals in seams
- Steam





# Facilities: Canine Inspection vs. Human Inspection



- Trained pest management professionals are only able to detect visible signs of infestation, leading to a ~30% accuracy rate in detecting bed bugs.
- Canines track bed bug pheromones – which are exuded by all live bed bugs – leading to a 90%+ accuracy rate in detecting bed bugs.
- Dogs can indicate there is an issue by sitting and pawing at the shelf with the problem or by standing on their hind legs to indicate a problem on a higher shelf.

# Facilities: Preventative measures

Your library may choose to enact preventative measures to stop bed bugs not caught at service counters from spreading further into the library.

Possible ideas include:

- Diatomaceous earth in book drops
- Sticky traps in book drops
- Cup traps beneath chair legs in seating areas

# Facilities: Treatment options

When pest management professionals suggest large scale treatments, there are a few points to consider:

- Just because you treat the entire building today, does not mean that you won't have a bed bug walk through the door again the next day, or the next week.
- Have the bed bugs been found in a single area or multiple areas in the building. If it is a single area, would it be possible to treat just the items/furniture in that area? For instance, if you have found multiple bugs in a seating area on the third floor, but none in any of the collections, perhaps you could just treat your building's furniture.

# Further policy questions for discussion

- What does your library's policy say about what sort of belongings may be brought into library facilities? Are suitcases okay? Bedrolls, bedding, and large backpacks? Bags of clothes?
- Is there a size limit?
- Is there a limit on the number of personal belongings a customer may bring into the facility?

# Further procedural questions to discuss

While the following procedural questions may not be written into an official policy, it is helpful to discuss the answers before an introduction/infestation situation:

- Who will be in charge of suspending/reinstating library privileges? Your pest management coordinator? Your library director?
- Where will you store items that are being quarantined? Will you discard all items you choose to quarantine rather than treat them? Will you bring the treatment to the items? Will you centralize treatment and bring the items to the treatment center?
- When dealing with live bugs found in the book drop, on a book truck, or on the shelf, without any sign of bugs or damage in any of the materials, will you treat all of the materials? Inspect them all and then return them to circulation?



# Further procedural questions to discuss, cont.

- If your pest management coordinator goes on vacation or on leave, who is their backup? Who is their backup's backup? Will they be responsible for all parts of the pest management coordinator's job? Or will that job be split (i.e., one staff member takes over inspection, quarantine, and treatment, and a high-level supervisor will be responsible for suspending borrowing privileges)?
- What will you do if a customer sues (or threatens to sue) for being bitten by a bed bug on the library premises or if they think the library is the source of their current infestation? What does your legal counsel say?
- How will you apply your pest management protocols if the person who has the issue is a staff member and not a member of the general public? What does your human resources staff say?

# Talking points to share with the media & community

Some of the key talking points for both the public and the media should be:

- Bed bugs are everywhere (hotels, public transit, doctor's offices, hospitals, nursing homes, movie theaters) and libraries are probably less likely to have issues with bed bugs than any of the aforementioned locations;
- Bed bugs are not a problem related to persons experiencing homelessness; they are a traveling population problem. It is just as likely (if not more so) for a traveler to bring bed bugs home with them from a trip than it is for a person experiencing homelessness to be the source of the introduction.
- Bed bugs do not carry or transmit diseases. Extensive research has been done on this and there is no evidence that bed bugs transmit diseases from one host to the next.
- Bed bugs are a nuisance, but are not dangerous.
- What is your library doing to combat the problem?
- What steps are you taking to ensure that introductions are stopped quickly?

# Community Education Opportunities

Wichita Public Library hosted a Community Awareness forum and recorded it for a local TV station

The screenshot shows the Kalamazoo Public Library website. The header includes the library logo, a search bar, and navigation links like 'How do I...?', 'Catalog', 'Browse', 'Download', 'Research', 'Library A-Z', 'Calendar', 'About', 'Kids & Parents', and 'Teens'. The main content area is titled 'Bed Bug Information' and contains several paragraphs of text, a link to 'View all Topic Guides', a PDF titled 'Michigan Manual for the Prevention and Control of Bed Bugs' with a 'Download PDF' link, and a video player showing a woman speaking.

Kalamazoo created a community resource page regarding bed bugs

The screenshot shows a YouTube video player. The video title is 'Wichita Public Libraries Bed Bug Awareness Training'. The video content is a presentation slide titled 'Why are Bed Bugs a Problem Now?' with a list of five reasons: 1) People, society are more mobile, less vigilant; 2) Less use of residual pesticides last few decades; 3) Significant switch to baits for roaches and ants; 4) Inadequate experience of pest management; 5) Bed bugs are resistant to Pyrethroids. The slide also features the Schendel logo and a 'Guaranteed' seal.

# Final pieces of advice

- Stay calm.
- Educate all staff about bed bug damage as early on in their tenure with your library as possible.
- If your staff worry about bringing bed bugs home from work with them, the best piece of advice I can give is: if you put your clothes in a dryer, on high, for one hour, all bed bug life stages will perish. Do not run clothing through the washer first!
- Everything really will be okay!

# Additional Resources

- *Infested: How the bed bug infiltrated our bedrooms and took over the world*, by Brooke Borel (2015): A superb social history of bed bugs.
- Wichita Public Library's bed bug video: <https://www.youtube.com/watch?v=XOXjuvCD8zA>
- Kalamazoo's Community Information Sheet: <http://www.kpl.gov/guides/bed-bugs/>
- The National Pest Management Association's tips for selecting a pest control company: <http://www.pestworld.org/find-a-pest-control-professional/tips-on-finding-a-pro/>
- The 2015 Bugs Without Borders Survey: <http://www.pestworld.org/news-and-views/pest-articles/articles/2015-bugs-without-borders-executive-summary/>



Questions?

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