

Inspection

Because bed bugs can hide in the smallest cracks and crevices, you will not know where to treat until you perform a detailed inspection. Because eggs and freshly hatched nymphs are as small as 1 mm and translucent, it is easy to overlook them. Using the proper equipment and conducting a thorough inspection before you begin any control operation will assure the best results.

Tools and equipment

You will need at least the following equipment:

- **Flashlight**

Bed bugs usually hide in dark crevices; without a flashlight, you may not see them. Use a bright flashlight (LED recommended) with fresh batteries.



- **Magnifying glass**

At 1 mm, most people need a magnifying glass to clearly see bed bug eggs and freshly hatched bed bugs. Get a large magnifying glass to make close-up examinations easier.



- **Collection containers** (re-sealable plastic bags, tightly capped vials, small jars, etc.)

You may need to keep the evidence you find. If you find insects that may or may not be bed bugs, you will want a specimen to submit to a professional for identification. Most pest management companies will identify pests for free.

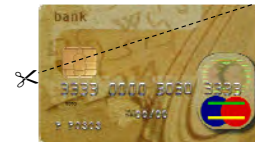


- **Forceps, tweezers, or a thin probe** to help collect specimens



- **Probe** for checking cracks

If cracks and crevices are too deep to inspect, you can use a metal spatula, putty knife, or other small probe to drive bed bugs out into the open. You can make a tool by cutting a long thin triangular piece from an old credit-type card, as illustrated.



Compressed air can also be used to flush bed bugs from hiding places in tight cracks.

- **Hand tools** for gaining access to outlets, access panels, etc. You may need to remove access panels or outlet covers to inspect for bed bugs. A selection of screwdrivers, pliers, and an adjustable wrench may come in handy.
- **Alcohol wipes**, baby wipes, or alcohol and cotton swabs
If you find spots that may be bed bug fecal stains or droppings, you can wet them with an alcohol swab, wipe, or baby wipe and look for a red or reddish brown color on the wipe. This will help you distinguish between bed bug droppings and dirt/lint or other matter.



What to look for

You will be inspecting for live or dead bed bugs, cast skins, eggs, and fecal stains or droppings. In a light infestation, there may be little to see.

- **Bed Bugs Live or Dead**
Live bed bugs may be crawling around their harborage or sitting quietly in a crack or a crevice. Newly hatched bed bugs are beige and difficult to see until they have had a blood meal. Bed bugs that have fed have a dark digestive tract and can be seen much easier than unfed bugs (see illustration). As they mature, the bugs become darker and easier to see on light colored backgrounds. Dead bed bugs are frequently found in or near the harborage and often with their legs and antennae broken off.
- **Cast skins**
Bed bugs grow by shedding their skin (molting) and leave a shed skin behind after each molt. The skins look like empty shells of the bed bug about the same size as the bed bug stage that left it. They are extremely light and will blow away at the slightest breeze.



- **Eggs**

Although they are only about 1 mm long, bed bug eggs are white and will show up well in a number of situations. They are more visible on dark backgrounds or smooth surfaces. Females have a tendency to lay eggs around their harborage areas. A cluster of eggs is a pretty good indication that there is a fertilized female nearby. Frequently, she will be hiding in a crevice just out of sight.



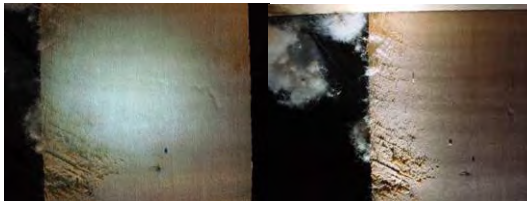
- **Fecal Stains & Droppings**

The droppings appear as small dark or black spots and are frequently the easiest to spot of all the evidence. A grouped arrangement of droppings suggests a closer search of the area. Droppings may appear as solid blobs or as thin ink-like stains. They can be seen as blood spots on sheets and pillows. The illustrations show moderate to heavy infestations, but in lighter infestations, there may be only a few spots.



How to look

Begin your search where people sleep and move across the area in a systematic fashion. It is important that you inspect all habitable crevices, and developing a method for ensuring you inspect each area can help prevent missed areas. It has been suggested from an informal study that 90% of the bed bugs can be found in mattresses, bed frames, nightstands, and upholstered furniture. While bed bugs can be found virtually anywhere, you should begin your search in the high probability areas, normally within 15-20 feet of the sleeping area. Hold your flashlight parallel to the surface being inspected to reveal eggs and newly hatched bed bugs.



With the light being shone from above, they may blend in to the background, but a flashlight held parallel to the surface will cause eggs and small bed bugs to cast a shadow that is easier to see.

Inspecting the bed

Inspection for bed bugs starts in the place where people sleep and moves out from there to other parts of the room. This inspection should be conducted before room preparation steps are taken.

Mattress inspection should focus on the following areas:

- Along the top and bottom seams, and along each side of the piping material sewn onto these edges
- Under mattress handles and along or inside air holes
- Between the mattress and box spring, platform or frame
- Inside folds of material and under buttons
- If mattresses are covered in vinyl plastic, look inside seams and rips in material
- Use alcohol or baby wipes to rub suspected bed bug droppings - if the spots dissolve into a reddish brown color, this could indicate bed bug droppings and should be a reason to continue inspecting until a live bed bug is found



Box spring inspection should focus on the following areas:

- Points where the box spring sits on the bed frame (lift slowly to avoid scattering bed bugs)
- The top surface of the box spring, inside folds of material
- Along seams and where the material is tacked to the frame
- Underneath the fabric cover - turn over the box spring and remove the thin cloth layer on the underside
- Use a flashlight, a magnifying glass and a crevice tool to check the spaces between box spring frame parts
- Look around and beneath furniture staples and tacks
- Use a flushing agent like compressed air to chase bed bugs out of hiding spots



Bed frame and head board inspection

- Wood beds and head boards (especially wicker) are preferred hiding spots for bed bugs over metal bed frames, but bed bugs will hide in crevices on metal and plastic, or where a mattress touches a metal frame.
- Visually inspect and use the crevice tool in all joints of the frame where parts meet.
- Turn the frame over and inspect from the underside.
- Check screw and nail holes for bed bugs.
- Take the bed apart to check between parts.
- Remove the head board from the bed and check for bed bugs along the joints and on the wall behind it.
- Double faced tape or carpet tape can be placed on the underside of furniture to capture wandering bed bugs. This is a monitoring tool, not a control strategy.
- Wicker furniture provides infinite hiding spots for bed bugs. Anything made of wicker should probably be discarded. See below for instructions on [disposing of infested items](#).



Inspecting other furniture near the bed

Furniture such as night stands will be likely places to find bed bugs, since they are close to sleeping hosts. As the bed bug population grows, overcrowding may force them to harbor farther away from their host.

- Empty drawers and shelves of the furniture closest to the bed, and place items into plastic bags to be inspected and cleaned.
- Electronics, such as lamps, remote controls, alarm clocks, and radios should be placed into plastic bags for further inspection and possible treatment.
- Pull out drawers and inspect every corner and the undersides, using a crevice tool to check under the metal drawer guide.





- Use the crevice tool to inspect gaps wherever the tool will fit, such as between the shelf and bookcase frame.
- Turn over all furniture to inspect the underside.
- Be sure to inspect screw and nail holes.
- Plastic and metal furniture can also harbor bed bugs, follow the same inspection procedures.
- Office-style chairs should be inspected by turning them over and checking screw holes and seams where fabric attaches to the frame.

Inspecting plush furniture

Plush furniture, such as a couch, will harbor bed bugs, even if residents are not sleeping there. In these cases, inspection will be more difficult due to the many inaccessible hiding spots.

- Inspect pillows and cushions, particularly the seams and the folds around zippers.
- Look at, and under legs of chairs and couches.
- Turn over the furniture and remove the thin cloth backing under each piece.
- Pay special attention to staples and where material is stapled to the frame.
- Look inside at all wood parts of the frame.
- If the piece is highly infested, consider disposing of it in a proper manner (see [furniture disposal](#) guidelines).



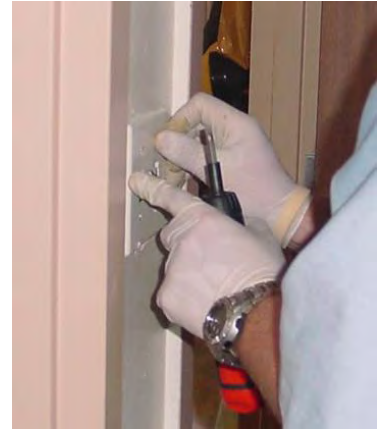
Inspecting the room perimeter

Once established, bed bugs will spread toward the perimeter of the room, including walls, moldings, and rugs.



- Look at moldings or the joint between the floor and wall closest to the bed.
- Use the crevice tool to check behind moldings. The tool will chase bed bugs out of hiding if used in a sweeping motion.
- Fold back the edges of wall-to-wall carpets to inspect for signs of bed bugs.
- Pay attention to the tack strip of carpets.

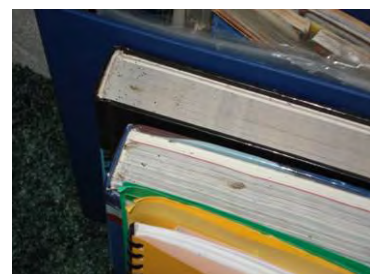
- Look under the edge of area rugs.
- Using a screwdriver, remove electrical switch and outlet, and phone jack plates to inspect. If bed bugs are hiding in these areas, signs may be evident along the edges and on the back of the plate.
- Inspect everything hanging on the walls. If framed art or photos are present and there is evidence of bed bugs nearby, open the frame to inspect inside or under the paper backing.
- Check under loose wallpaper and areas of peeling paint.
- Take down curtain rods and inspect inside them and underneath hardware on the walls.
- Look at closet, bathroom and other door frames, along hinges, and in the bore hole for the latch on each door.
- Make a note if bed bugs are found on walls. Ceiling lights and fixtures with bed bugs could indicate that they are moving from a room or unit above.
- If bed bugs are on walls, they may hide under ceiling moldings and in smoke detectors.



Inspecting unusual locations

Bed bugs may turn up in unexpected places in moderate and large infestations. If the infestation is large, every object in the affected area should be carefully inspected. Bed bugs have been found in such locations as:

- Television and other remote controls, in the battery compartment
- Telephones, cell and cordless phones
- Lamps and alarm clocks
- Computers and other electronics
- Cardboard boxes in closets and under the bed
- Children's toys and stuffed animals
- Jewelry boxes
- Brick walls and "popcorn" or other textured ceilings
- Books, magazines, newspapers, and files
- Inside hollow doors



- Ceiling light fixtures
- Smoke detectors
- Heating units
- Air conditioners and ducts
- Wheelchairs



Signs of room-to-room spread

Often, bed bugs infesting a room or unit will make their way to an adjacent room or unit through electrical, heat and phone line conduits. It has even been documented that bed bugs can cross hallways and move between units under doors. It is important to identify cases where this happens and address the problem from both sides of the wall or hall.

Evidence that may suggest room to room movement of bed bugs includes:

- Bed bugs in ceiling light fixtures
- Bed bugs hiding in and coming out of electrical and switch plates on walls and bed bug droppings found on the inside of the switch plates, or near ducts
- Bed bugs frequently found in unusual locations, such as the kitchen or bathroom. In such a case, it may be that the kitchen or bathroom is located adjacent to an infested bedroom or heavily infested unit, and bed bugs are traveling along water pipes.

Bed bug detecting dogs

Several companies in Michigan offer bed bug detection using dogs, specifically trained for locating bed bugs. The dogs are a highly efficient and sensitive tool, and can be especially useful in multi-unit housing situations. However, like any inspection tool, they are not 100% accurate. Combining the services of a bed bug detection dog with a licensed pest management professional can improve the chances of finding and eliminating obscure harborages. A 2-dog system is sometimes used to reduce the problem of “false positives”. When the dog signals for bed bugs, a pest management technician should be present to confirm and later treat the area. Dogs can positively indicate a bed bug problem, but it is unclear whether using a bed bug dog can absolutely rule out bed bugs (for example, if bed bugs are hiding in an area inaccessible to the dog). The dog handler team should be recognized by a certifying organization, such as the National Entomology Scent Detection Canine Association.