



## Bed Bugs

*Cimex lectularius*; Family: Cimicidae



*Bed bug*  
(actual size 3/8 inch).  
From USDA Leaflet 453  
"How to Control Bed Bugs"



*Partly engorged bed bug.*  
Image courtesy of:  
Dr. Harold Harlan, B.C.E.



*Bed bug and tiny nymph bed bug (to the right).*  
Image courtesy of:  
Dr. Harold Harlan, B.C.E.



*Bed bugs in tucks of mattress.*  
Image courtesy of:  
Dr. Harold Harlan, B.C.E.

## Injury

In most parts of the United States the only bed bug of importance to humans is *Cimex lectularius*. Bed bugs of this species feed on blood, mostly from people, but are also known to feed on bats or other animals including rabbits, rats, guinea pigs, and domestic fowl, especially when the animals are housed in laboratories. The bed bug has a sharp beak that it uses to pierce the skin of the host. It then begins feeding, injecting a fluid that helps in obtaining food. This fluid causes the skin to become swollen and itchy. Bed bugs are nocturnal, feeding at night, often biting people who are asleep. Where infestations are severe one may detect an offensive odor that comes from an oily liquid the bugs emit. Bed bugs can be enticed to bite during the day if light is subdued and they are hungry.

## Description

A mature bed bug is an oval-bodied insect, brown to red-brown in color, wingless, and flattened top to bottom. Unfed bugs are 1/4 to 3/8 inch long, and the upper surface of the body has a crinkled appearance. A bug that has recently fed is engorged with blood, dull red in color, and the body is elongated and swollen. Eggs are white, and are about 1/32 inch long. Newly hatched bugs are nearly colorless.

## Life History

Bed bugs undergo a gradual metamorphosis (change in form) and the young resemble the adult. The young are called nymphs. Under ideal conditions bugs feed regularly when temperatures are above 70° F. Eggs are deposited in batches of from 10 to 50 in crevices of bed frames, floors, walls and similar household sites. When fresh, the eggs are coated with a sticky substance that causes them to adhere to any object on which they are deposited. Eggs are not deposited at temperatures lower than 50° F. Eggs hatch in 6 to 17 days but may take as long as 28 days in cooler temperatures. The nymphs begin to feed as soon as they can locate a host. They molt 5 times before reaching maturity and the nymphal period lasts about 6 weeks. There may be up to three generations per year in our climate.

Bed bugs feed for a period of 3 to 5 minutes, after which they are engorged and drop off the host. They crawl into a hiding place and remain there for several days digesting the meal. When hungry again, they emerge from the hiding place and search for a host. If no food is available, the new nymphs may live for several weeks in warm weather, or several months in cool weather. Older bugs may go for 2 months or longer without food.

## Management

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Management consists primarily of finding places where the bed bugs hide in the daytime and cleaning these sites as thoroughly as possible. Hiding places can often be discovered by keeping an eye out for black or brown spots of dried insect excrement on surfaces on which the bed bugs rest. Eggs, eggshells and cast skins may also be found in resting places. Early in an infestation bed bugs are likely to be found only about the seams, tufts, or folds of mattresses or daybed covers, but later they spread to crevices in the bedsteads. In severe infestation they may be found behind baseboards, window and door casings, pictures and picture frames, in furniture, loosened wallpaper, cracks in plaster and the like. If clothing, sheets, or blankets are suspected of being infested, wash and then tumble-dry for 20 minutes in a clothes dryer on high temperature (if safe for the fabric).

Management should focus on mechanical methods such as vacuuming, removing or sealing loose wall surfaces (wallpaper, paint, etc.), caulking cracks and crevices, and other hiding places. A thorough cleaning may need to be done more than once as eggs may be missed, or bugs may be well hidden during the cleaning process. Vacuum the mattress, especially paying attention to tucks and along seams where bed bugs like to hide. Be sure to remove and seal the vacuum cleaner bag or container immediately after cleaning. Place the vacuum cleaner bag into a plastic garbage bag, tightly seal, and discard.

The effectiveness of steam cleaning has been questioned, because the mattress quickly absorbs the heat and the bed bugs are not harmed. One may put a zippered mattress cover, such as is used for dust mites, on the mattress. This traps any bugs inside. However, effectiveness of this method depends on the thoroughness with which the slats, box spring and bed frame are cleaned. If bed bugs are still in the frame, they may crawl over the mattress cover to reach a host. If they are trapped in the cover, and none are left on the frame or other places in the room, the biting should cease. Bed bugs can live a long time without a meal, so it is best to leave the cover on the mattress for at least a year.

After thorough cleaning be sure the bed is moved away from walls so it does not touch them. Small double-cupped interception traps can be placed under the bed legs. Remove dust ruffles or bedskirts, and keep bed covers and blankets up off the floor.

If bed bugs have been confirmed and more than one has been found, treatment by a pest management professional is strongly suggested. Applying pesticides yourself for bed bugs is not recommended. If not done properly, it can often complicate the bed bug problem. Pesticides may be applied to hiding places around baseboards, moldings and floorboards, the bed slats, box spring and frame enough to wet thoroughly, then allow to dry completely. Do not miss any crevices where bed bugs may hide. **Caution: DO NOT USE ANY INSECTICIDE ON A MATTRESS.** Using a mattress cover designed for dust mites and/or bed bugs or discarding the mattress are options.

**REFERENCES:** Frishman, A. 2000. Bed Bug basics and control measures (Pest Control 68: p. 24); Harlan, H. 2001. Personal Correspondence (National Pest Management Association); Krueger, L. 2000. Don't get bitten by the resurgence of bed bugs (Pest Control 68: pp. 58-64); USDA leaflet L-453 "How to Control Bed Bugs."

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**This publication contains pesticide recommendations. Changes in pesticide regulations occur constantly and human errors are still possible. Some materials mentioned may no longer be available and some uses may no longer be legal. All pesticides distributed, sold or applied in New York State must be registered with the New York State Department of Environmental Conservation (DEC). Questions concerning the legality and/or registration status for pesticide use in New York State should be directed to the appropriate Cornell Cooperative Extension Specialist or your regional DEC office. READ THE LABEL BEFORE APPLYING ANY PESTICIDE.**

<http://www.entomology.cornell.edu/cals/entomology/extension/idl/idlfactsheetlist.cfm>

### **For additional information see:**

<http://www.nyc.gov/html/doh/bedbugs/html/home/home.shtml>

*(How to identify, prevent, and get rid of bed bugs, including choosing a pest management professional)*

[http://www.nysipm.cornell.edu/publications/bb\\_guidelines/](http://www.nysipm.cornell.edu/publications/bb_guidelines/)

*(How to find and clean bed bug hiding places. Written for group residences, but much of the information applies as well to houses and apartments.)*

[http://www.nysipm.cornell.edu/publications/bed\\_bugs/files/bb\\_travelers\\_online.pdf](http://www.nysipm.cornell.edu/publications/bed_bugs/files/bb_travelers_online.pdf)

*(A printable info card for travelers and college students)*