

# MuseumPests.net

A Product of the Integrated Pest Management Working Group

## Bed Bug

*Cimex lectularius* (Linnaeus)

LOW RISK

INDICATOR:  
INVESTIGATE ENVIRONMENT

### GENERAL INFORMATION

*Cimex lectularius* has made a comeback over the past 20 years, from almost total anonymity to a tiny, insignificant creature that makes front page news. It's a very secretive insect that subsists solely on blood from warm-blooded hosts, the most often affected host being humans. Its common name of common bed bug unfortunately suggests that it is an insect associated with the bed room, but clearly that is not the case and blood bug might be a better common name. Bed bugs are nest associates and our nest is our home. The insect is normally one that lives close to its food source and in many cases it will be found in a bedroom, on the bed (i.e., box spring, mattress, frame, head board) or in furniture nearby. It is an insect that crawls about searching for the host and later for harborage (if it doesn't get back to its original place) and may crawl into other places, other pieces of furniture, backpacks, suitcases, piles of clothes, wall hangings, etc. It becomes an insect that is easily transported by humans to other places, many of which can easily become infested.

Bed bugs do not pose a direct threat to museum collections. Because they are human parasites whose infestations are tenacious and easily spread, the risk they pose to collections would be through causing collection objects to undergo treatment. Repeated episodes also threaten the well-being of heritage institutions, because of visitors' fear of acquiring bed bugs.

### SIGNS OF INFESTATION

In a public institution, the first sign of an infestation may be a report of an insect sighting.



Information current as of 19 March, 2015  
For more information visit [www.museumpests.net](http://www.museumpests.net)

### DIAGNOSTIC MORPHOLOGY

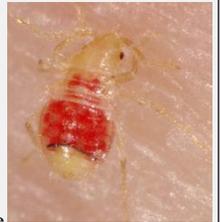
Adults:

- Adults are 4-5 mm long
- Dark brown to orange in color
- Front wings are reduced to pads and there are no hind wings

Immature Nymph Stage:



- 1<sup>st</sup> instar nymphs are clear to whitish in color and 1 mm long
- Nymphs become straw colored to dark brown as they mature
- Nymphs are red colored after feeding on a blood meal.



Bed bugs tend to harbor in proximity to one another, so if the harborage is not hidden from view it will be recognized because of its collection of droppings, eggs, egg shells, shed skins, and insects in various stages of the life cycle. The harborage may be in difficult to locate areas such as under electric switch plates, in computers, on the upper face of wall moldings, and other crevices hidden from view. In upholstered furniture, bed bugs can harbor in seams or behind the netting used on the underside of the chair.

For detection of suspected infestations, blunder traps, attractant traps using heat or CO<sub>2</sub>, passive monitors which resemble harborage areas, or a mixture of these strategies have been used. Trained dogs have been used with varying levels of success to search for bed bug infestations and are extremely useful in very low incidences of infestation where visual exams are difficult and time consuming. The canine alert should be followed up with a visual examination.

### FOOD SOURCES

Bed bugs feed on human blood and are attracted to warmth and carbon dioxide (CO<sub>2</sub>) plus some other chemicals produced by the human body. They can survive many months without feeding. They do not live on humans, but will harbor near where we stay for long periods of time. These areas include bed, sofas, chairs, and related pieces of furniture. In office situations, prime areas are desk chairs, sometimes desks, under desk cabinets and file cabinets and divider walls between desks. When hungry, bed bugs will emerge to feed if they sense hosts are near, but otherwise will tend to feed late at night into the early morning hours.

Concurrent rodent, bat and bird infestations also provide good food sources. A related infestation of bat bugs or bird bugs can also be present—correct identification is important.

### LIFE CYCLE

The life cycle is temperature dependent and, on average, 4 to 6 weeks under certain conditions are required from egg to adult maturation.

Cooler temperatures and periods of starvation will cause the life cycle to lengthen. In general, fed bugs will last longer during bouts of starvation than unfed bugs. Bed bugs can easily live four or more months without a blood meal, and some adults have gone a year without feeding under certain conditions.

### CONTROL & TREATMENT

Museum collections can be disinfested using a freezing procedure of 5 days at -5° C (23° F) or they could be flash frozen to -26° C (-15° F), the super cooling point of the eggs. An important follow up would be careful and detailed vacuuming to remove evidence of old activity. An alternative is anoxic treatment with [Argon](#). If investigation reveals an infestation beyond the isolated object, multiple treatment strategies may be needed for eradication. This could include steam, Cryonite (carbon dioxide snow), vacuuming, crack & crevice sealing and monitoring. Heavy infestations may require pesticide applications in wall perforations, outlets, switches, cable lines, to prevent infestation and migration. Pesticides are packaged in liquid and dust formulations, but also gas fumigation with Vikane (sulfuryl fluoride). Fumigation can be in small pods or entire structures. Localized heat treatment in which boxes or tents are erected and infested materials introduced to be treated at high temperatures (i.e. 130 degrees F [Heat Treatment Fact Sheet](#)) While it is not correct to associate bed bug infestations with being "dirty," good housekeeping practices help to control and enable early detection of infestations. Reducing clutter, carpets and soft furnishings will reduce the number of places that bed bugs can harbor without being detected. Regular programs of HEPA vacuuming and/or steam cleaning also help to reduce risk of infestation. Use of certain monitoring devices may also be used to help in early detection.

Adult image taken from Stanislav Krejčík  
[http://media.eol.org/content/2009/07/24/06/99575\\_orig.jpg](http://media.eol.org/content/2009/07/24/06/99575_orig.jpg)  
Nymph image submitted by Louis Sorkin, AMNH