



BUG BIZ

Pest Management and Insect Identification Series



Cimex lectularius, Common Bedbug (Hemiptera: Cimicidae)

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Description

Cimex lectularius is a blood-feeding insect of the hemipteran family Cimicidae, all of which are parasites that also feed on birds, bats and rodents. The common bedbug, *Cimex lectularius*, and the tropical bedbug, *Cimex hemipterus*, both feed on humans, though *C. hemipterus* has not been reported in Louisiana.

Bedbug adults are small, wingless bugs approximately one-fifth of an inch (5 mm) in body length, with reddish-brown, flattened bodies. The head bears two antennae and two black, compound eyes. The beaklike mouthparts are adapted for piercing skin and sucking blood. The thorax bears six legs but no wings and narrows where it connects to the large, flattened abdomen. Female abdomens are more rounded than those of males. The male abdomen tapers at the rear, somewhat like the shape of a football. Bedbugs engorge during feeding, and their abdomens can double in size and become a deeper red color. The eggs are small, less than one-twenty-fifth of an inch (1 mm), elongate and white. The juveniles look like smaller versions of the adults but are sometimes lighter in color and translucent.

Several additional members of the family Cimicidae occasionally find their way into structures. These species feed on bats or birds, rarely bite humans and do not establish large infestations away from hosts. Separating these species from bedbugs requires detailed examination of specimens and technical knowledge. Consult a professional taxonomist or insect diagnostician for positive identifications.

Life Cycle

Bedbugs perform an unusual form of mating called “traumatic insemination.” The males possess barblike genital organs that are used to stab into the female’s abdomen and deposit sperm. The sperm migrate from the wound to the ovaries, where the eggs are fertilized. The genital tract in females is, therefore, only used for

egg laying and not copulation. Females can withstand repeated stabs from multiple mates, but too many can have negative effects on longevity.

Females must feed to lay eggs. If mating and meals are consistent enough, she will lay an average of three eggs a day for most of her adult life. After emerging from their eggs, bedbugs go through a series of five molts before reaching adulthood. Individuals must take a blood meal before each molt. One to two months are typically required to grow from egg to adult. The timing, however, can change considerably depending on temperature and frequency and size of meals. Warmer or cooler temperatures can speed or slow development, respectively, and infrequent or small blood meals resulting from absence or movement of the host can slow development. Optimal conditions for growth are around 86 degrees Fahrenheit with feedings every three to four days.



Adult female bedbug with juveniles.
Gary Alpert, Harvard University, Bugwood.org.



Engorged adult bedbug.
Gary Alpert, Harvard University, Bugwood.org.

Bedbugs have flattened bodies that allow them to navigate the seams and cervices of furniture and bedding where they form groups. These areas are referred to as refugia. These refugia can contain eggs, juveniles and adults and are the places where adults mate and lay eggs. Bedbugs spend most of their time hiding in these refugia, only emerging at night to feed, after which they return and digest their blood meal.

Ecological Significance and Pest Status

Bedbugs are not known to transmit any diseases, but bites can be irritating and numerous. Infestations, if left untreated, can reach several thousands of individuals. They are most common in places with a high turnover of people, especially hotels, hostels, and bed-and-breakfasts. They are usually spread when people unknowingly carry individual bedbugs from infested locations. Bedbugs can hide in clothes, luggage bags, personal belongings, and on people. They are also known to spread through the sale of used furniture from infested locations. When traveling or purchasing used furniture, it is best to conduct an inspection of any seams and bedding to ensure there are no bedbug hitchhikers. A common misconception holds that bedbugs are associated with poor hygiene, but this is not necessarily the case, and even five-star resorts and high-end hotels can suffer from infestations.

Bedbugs and refugia are not limited to mattresses or box springs and are sometimes found in other furniture, appliances and electrical outlets and under rugs or floorboards or any clutter around beds. They prefer to feed on humans but will occasionally feed on pets if no humans are present, thus increasing their chances of survival in the absence of regular feeding. Studies have demonstrated that adults can survive over a year and a half without food, but younger individuals cannot survive as long.

Control

Preventative measures, such as inspection of beds and furniture while traveling and inspection of used furniture after purchase, can help reduce the chance of bedbug infestations. If present, evidence of individuals or their refugia (e. g., shed skin, frass, dead individuals) can be found within the seams of the mattress and box spring or other furniture or hiding spots. Small spots of blood on sheets and bedding resulting from bites may also indicate their presence. Reactions to bites are highly variable and alone are not enough to diagnose an infestation.

Given their cryptic nature and ability to move between furniture and other hiding spots, ensuring that an entire infestation has been eradicated can be difficult. Vacuuming refugia (and immediately disposing of the

bag), steam cleaning all seams and crevices of beds and furniture, cleaning bedding with hot water and detergent (with borax) will kill individuals. Insecticide use will increase effectiveness of these measures, and several over-the-counter pesticides that target bedbugs are available. It is important to use these pesticides according to the label to ensure maximum effectiveness and safety.

If an infestation is too large or difficult to remove by homeowners, consultation with a professional pest control operator is necessary. Pest control professionals are licensed to use a variety of practices that are not available to the typical homeowner depending on the severity of the infestation, and they will usually conduct follow-up inspections to ensure the infestation has been eradicated.

References

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Refugium with many bedbugs, cast skins, eggs and frass. Barbara Bloetscher, Ohio State University, Bugwood.org.

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