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Bed Bugs

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What You Should Know

- Bed bugs are blood feeding parasites that can become a nuisance to people and other animals.
- Bed bugs are not known to transmit diseases to humans while feeding.
- Sometimes bed bug bites are mistaken for other insects or spiders because they are uncommon pests.
- Infestations are difficult to control and completely eradicate without professional assistance.

Bed bugs are notorious around the world for their impact on humans and have been recognized as important pests for hundreds of years. Infestations were common before World War II, but heavy insecticide use eliminated most bed bugs in North America for almost 30 years. However, increased international travel and the reduction of routine insecticidal sprays have recently allowed bed bugs to make a comeback as a nuisance insect throughout the world. The human bed bug, *Cimex lectularius*, (Fig. 1) is the most common species in the U.S. and Canada. Several other related species are present in Utah, including the bat bug, *C. pilosellus*, the barn swallow bug, *Oeciacus vicarius*, and the poultry bug, *Haematosiphon inodorus*. Bed bugs are blood-feeding insects in the order Hemiptera and family Cimicidae. These insects are related to other fluid feeding true bugs such as squash bugs and boxelder bugs, but are closely associated with warm-blooded animals like humans.

Fig. 1. Common male bed bug.[1]

Fig. 2. Bed bug nymph engorged with blood.[1]

Description and Life Cycle

In general, human bed bugs are oval insects that are flattened top to bottom, and range from ¼ - ⅜″ in length. Adults are always wingless and may resemble aphids, ticks, or other immature true bugs (Fig. 1). Bed bugs are normally brown in color, but turn red and become bloated after taking a bloodmeal (Fig. 2). Nymphs look similar to adults except smaller, and are nearly colorless or pale yellow. All life stages have a short beak-like mouthpart with slender piercing stylets. Both sexes can pierce animal tissue and remove blood with a pain-free bite that goes virtually undetected. Hosts of the common bed bug include humans, mice, rats, rabbits, guinea pigs, horses, cattle, and poultry.

Bed bugs can complete a generation in 45-60 days, but can have up to four if temperatures are exceptionally warm and bloodmeals are easily accessible. Mated females can lay 200-250 eggs over a period of several weeks. Eggs are oval-shaped and white, and will hatch in 6-10 days (Fig. 3). Newly hatched nymphs will attempt to find a host and feed immediately. Nymphs will molt five times and gradually get larger with each molt before reaching the adult stage. Adults live for 10-12 months under normal temperature conditions.

As with some other insects, all life stages can be found in the same active colony. In addition to cast skins from molting, blood droplets can be an indication of a bed bug infestation (Figs. 4-5). After each blood meal, bed bugs excrete reddish-brown fecal blood spots on or near the host, or in their daytime hiding places.

Bed Bug Behavior

Bed bugs are secretive, nocturnal insects that emerge from hiding places at night to feed on nearby hosts. Although bed bugs are wingless, they can move quickly over furniture, walls or floors. Colonies will be clustered together at night and while feeding (Fig. 3). They may feed during the day if hungry and lighting conditions are dim. During the night, bed bugs are likely hiding in enclosed places such as along furniture seams, under wall paper and in wall cracks. Because bed bugs are relatively flat and small, they can fit into almost any space and go undetected without careful inspection.

They prefer to feed on any exposed bare skin (face, neck, shoulders, arms, hands, etc.). If left undisturbed, a bed bug can obtain a full blood meal in 3-5 minutes and will quickly retreat into hiding. Individual bed bugs do not feed every night, but must feed before each molt. Typically, nymphs and adults feed every 5-7 days if blood is available. Bed bugs are attracted to the carbon dioxide warm-blooded animals release while breathing. If an animal is not accessible, bed bugs can live for 4-12 months without feeding. Bed bugs can survive longer without a meal if temperatures are cool (e.g., unheated room in the winter).

Fig. 3. Bed bug infestation, including eggs and cast skins, on a curtain.[1]

Fig. 4. Bed bug damage to a mattress.[1]

Medical Importance

Bed bugs are parasites that generally do not kill the host; however, heavy infestations can weaken small animals, such as pets. Fortunately, there is no evidence that bed bugs transmit diseases. Typically, humans do not notice bed bug feeding at first because it happens during the night. Over 2-7 days, the bite area may itch, swell, burn, become inflamed, or form a welt. Effects of a bite vary with the individual, but may persist for a week or more in susceptible persons. Symptoms may worse with multiple bites, although some people have no adverse reaction to bed bug bites.

Often bed bug bites are attributed to other insects or spiders and may go unnoticed for a long time. As a result, colonies can get quite large before they are detected. It is important to recognize not all bites are caused by bed bugs. An infestation is confirmed by finding actual bed bugs, which may take a professional. The chances of encountering bed bugs increases with travel, staying in hotels or buying used furniture. Bed bugs should be suspected if you wake up with red, swollen bites you did not have when you went to sleep, or notice itchy bumps on skin that are exposed at night.

Fig. 5. Bed bug damage to a night stand.[1]

Early Detection is Important

• Bed bugs are often brought into buildings with luggage or used furniture. If you suspect an infestation, check for activity where luggage is stored.

• Fecal blood spots are a good indication of an active bed bug infestation. Look for small, dark droplets of dried blood on bedding, mattresses, and bedroom furniture (Figs. 4-5). Colonies will try to hide in small cracks, especially where the floor meets with the wall.

• Colonies tend to be near beds or where people rest. In particular, thoroughly inspect bed frames, mattresses, box springs, headboards and other furniture located near the bed.

• Bed bugs can also be found in other parts of the house, including living rooms, laundry rooms and places where clothing is stored. Look behind wall hangings, clocks and around pet kennels for signs of cast skins or small blood droplets.

• Bat bugs and bird bugs can be found on animals nesting in a home attic, and eventually feed on pets and humans.

• Sometimes bed bugs release an offensive odor with oil glands in the body, although the odor may only be detectable with heavy infestations.

•Reducing clutter around the home will also improve the chances for early detection and minimize potential hiding places for bed bugs.

Control Options

Unfortunately, bed bugs are difficult to control because of their size and hiding behavior. A professional pest control company should be notified if bed bugs are detected. Professionals are recommended because complete eradication can only be achieved with very detailed inspections and restricted-use insecticides. Professionals know where to look for bed bugs and have special tools to estimate the extent of infestation.

Sanitation: Deep cleaning the entire home or building is the first step, including vacuuming and steam cleaning every piece of furniture and luggage, and cleaning all the floors, walls and ceilings. Often pictures, furniture, toys, and electronic equipment must be disassembled.

Temperature treatments: All fabrics, including clothing, blankets and bedding should be inspected and washed. Infested fabrics should be laundered (140°F minimum) or discarded. Bed bugs can also be killed with cold treatments by chilling infested materials below 32°F for at least two weeks.

Insecticides: Bed bug control is expensive and can take several weeks or months. Products effective against bed bugs are restricted use chemicals only available to commercial applicators. Professional pest controllers have access to a variety of low-odor sprays, dusts and aerosols. In addition to continuous sanitation, several chemical applications may be necessary for complete bed bug control.

[1] Images courtesy of Joelle Olson, Ecolab, St. Paul, Minnesota.