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# School Pest Solutions

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## Bed Bugs

Many areas of the country are experiencing a significant increase in bed bug infestations in residences, hotels, college campuses and schools. Many people associate bed bugs with unsanitary conditions, as often is the case with pests like cockroaches. However, bed bug infestations occur across the spectrum of social and economic settings and are not necessarily an indication of unsanitary conditions. Experts have speculated that the increase is more likely due to a number of factors such as to be more related to increased travel, changes in tactics used for controlling pests such as cockroaches, and an increasing resistance by bed bugs to the most commonly used insecticides.



*Bed Bug (Cimex lectularius)*

## Identification and Biology

Bed bugs adults are reddish-brown, oval, flattened insects about 3/16" long and up 1/8" wide. Engorged (blood-fed) adults are swollen and dull red. Though wingless, adult bed bugs do have small wing pads. The dark colored eyes stand out and the sides of the collar-like pronotum curve slightly around the head and is covered with long hairs. The nymphs (immatures) resemble the adult but are smaller in size. Newly hatched nymphs are almost colorless whereas engorged nymphs are reddish and swollen. Bed bug eggs are white, oval, and about 1 mm long.

## Life Cycle and Habits

Although bed bugs prefer humans, they will feed on many other warm blooded animals, including cats, dogs, mice, rats, and birds. Bats and swallows may serve as hosts and be responsible for introducing infestations around buildings, but they are more typically fed on by other species in those situations.

There has been no scientifically-based evidence showing that bed bugs transmit diseases. The effect of their feeding on humans is of more concern. Bed bugs do not bore into the skin; instead, they pierce their mouthparts into the host's skin and suck out blood. As bed bugs feed, they inject saliva which can trigger an allergic reaction that may appear as swelling, itching, and irritation. Some people may not react and exhibit the bite marks, while others may have a 1-2 day delay before bite marks appear. The marks may take a week or more to fade. Large infestations of bed bugs may have a noticeable "sweet" odor.

When conditions are favorable, bed bugs can feed and breed all year. They typically hide during the day on (or in) mattresses/box springs or in cracks and crevices no thicker than an ordinary credit card. Each female can lay 200 to 500 eggs. When the insects feed regularly, eggs are laid in batches of 10 to 50 at 3 to 15-day intervals. Bed bugs lay more eggs when the temperature is above 70°F and usually stop when temperatures drop below 50°F. A sticky substance covers the egg when it is first laid. After it dries, it allows the egg to stick to its host surface. Eggs hatch in about 10 days in warmer temperatures and at lower temperatures may take as long as 28 days.

Newly hatched bugs feed at the first opportunity. They molt five times before reaching maturity and must eat at least one blood meal between each molt. Immature stages can survive more than two months without feeding; however, most nymphs usually develop into adults within 2 to 6 weeks. One may find all stages of bed bugs in well-established infestations. Bed bug adults can survive up to a year or more without feeding, which means that infestations may continue to survive even if a house was left vacant for several months.

Bed bugs cannot fly or jump but they can crawl. They spread primarily through human activity- people may unintentionally move them from one place to another in luggage, laundry, etc. Piles of nymphs' shed skins often accumulate in and around bed bug hiding places.

## How to Have an Insect Identified

If a suspicious bug is found in school, it should be collected for identification. To collect the specimen, use a piece of tape, tissue or tweezers, and place the specimen in small leak-proof vial, such as a pill bottle or film canister containing a small amount of rubbing alcohol. Do not crush the specimen. Do not mail or transport live specimens as they may escape during transit. Have the specimen identified by your contracted pest management service or by the University of Maine Pest Management Office (Telephone: 800-287-0279).

## Infestations of Schools

From Maine Center for Disease Control's "Bed Bugs and Schools Fact Sheet"

Bed bugs typically become a problem in schools when carried in by students or staff via backpacks, clothing or other belongings. Introductions into schools can happen frequently in communities with high rates of infestation of homes. Unless students or staff sleep the night in the school, or the school shares space with facilities where people sleep, reproducing infestations of bed bugs are unlikely to be found in a school. Eggs do not necessarily indicate a reproducing population. Most likely a child or adult carried an egg-bearing female into the school.

## School IPM Policy and State Law

Bed bug management must be done according to the school's Integrated Pest Management (IPM) policy. Although bed bugs elicit a lot of emotions, schools should not overreact to an infestation. Each school must have an IPM policy in place and should follow it carefully when deciding how to control a confirmed bed bug problem. The school's IPM Coordinator must approve any pesticide applications and make sure the regulations in **CMR 01-026, Chapter 27, Standards for Pesticide Applications and Public Notification in Schools**, are followed. Any pesticide application must be performed by licensed pesticide applicators.

## Eliminating Bed Bugs

When a bed bug is found, it can be difficult to determine the source. A bed bug found on a student or student's belongings may have come from another student or a staff member rather than from the student's home. Similar to head lice, it is very important to address the issue with care and sensitivity. There is no association between cleanliness, socioeconomic status and bed bug infestations. Anyone can experience an infestation.



*Bed bug bites*



*Evidence of blood spots*



*Bed Bug Eggs*

If the specimen is confirmed to be a bed bug, the principal and school health professional should be notified and the following steps are recommended:

- The classroom or other area where the bed bug was found should be carefully inspected by a trained professional including desks, floors, walls and storage areas for student belongings. A thorough cleaning may be needed including vacuuming with special attention to cracks and crevices in furniture and equipment, walls and floors, and laundering washables in hot water and drying on the highest heat setting. Delicate fabrics can be dry cleaned or soaked in warm water and laundry soap for several hours before rinsing. Infested items that cannot be cleaned or treated with high heat (>120F for several hours) should be disposed of in an appropriate manner. When transporting potentially infested items, place in plastic bags to reduce potential for accidental spread of bed bugs to other areas. If taking potentially infested items to a dry cleaner, bag the items and notify the establishment so that they can take additional precautions to prevent spread. If these measures are not adequate to resolve a problem, a licensed pest management professional can review additional options including heat treatment of infested areas and pesticides labeled for bed bugs.
- If the bed bug was found on a child's clothing or other belongings, the child's parent(s) or guardian(s) should be notified. There is no need to send the child home. Similar to head lice, the school health professional should manage the case including re-inspecting belongings, desk, classroom, etc. until the problem is resolved. Student belongings such as backpacks can be isolated in tight-sealing plastic containers or bags to reduce potential for bed bug dispersal, both at home and in school while the problem is being resolved.
- Parents of all children using the room where the bed bug was found should also be notified and provided with basic information about bed bugs including description, signs and symptoms, strategies to eliminate infestations in homes including cleaning, laundering and specially designed mattress and box-spring covers that can entrap bed bugs and reduce harborage. The information should include where to go for additional help.

## Photo Credits

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