



Pesticide Information

Office of Pesticide Programs

www.epa.gov/pesticide

Top Ten Bed Bugs Tips

1 Make sure you really have bed bugs, not fleas, ticks or some other insect. You can compare your insect to the pictures on our bed bug Web page or show it to your local extension agent.

2 Don't panic! Eliminating bed bugs is difficult, but it's not impossible. Don't throw out all of your things because most of them can be treated and saved. Throwing stuff out is expensive, may spread the bed bugs and could cause more stress.

3 Think through your treatment options – Don't immediately reach for the spray can. Try other things first. Integrated pest management (IPM) techniques may reduce the number of bed bugs and limit your contact with pesticides. If pesticides are needed, always follow label directions or hire a professional. There is help available to learn about treatment options.

4 Reduce the number of hiding places – Clean up the clutter. A cluttered home provides more places for bed bugs to hide and makes locating and treating for them harder. If bed bugs are in your mattress, using special bed bug covers (encasements) on your mattress and box springs makes it harder for bed bugs to get to you while you sleep. Leave the encasements on for a year. Be sure to buy a product that has been tested for bed bugs and is strong enough to last for the full year without tearing.

5 Regularly wash and heat-dry your bed sheets, blankets, bedspreads and any clothing that touches the floor. This reduces the number of bed bugs. Bed bugs and their eggs can hide in laundry containers/hampers, so clean them when you do the laundry.

6 Don't rely on do-it-yourself freezing as a reliable method for bed bug control. While freezing can kill bed bugs, temperatures must remain very low for a long time. Home freezers are usually not cold enough to kill bed bugs. Putting things outside in freezing temperatures can kill bed bugs, but it can take several days when the temperature is 0° F and almost a week when the temperature is 20° F.

7 Use heat to kill bed bugs, but be very careful. Raising the indoor temperature with the thermostat or space heaters won't do the job. Special equipment and very high temperatures are necessary for successful heat treatment. Black plastic bags in the sun might work to kill bed bugs in luggage or small items, if the contents become hot enough (about 110°F for at least 3 hours).

8 Don't pass your bed bugs on to others. Bed bugs are good hitchhikers. If you throw out a mattress or furniture that has bed bugs in it, you should slash or in some way destroy it so that no one else takes it and gets bed bugs.

9 Reduce the number of bed bugs to reduce bites. Thorough vacuuming can get rid of some of your bed bugs. Carefully vacuum rugs, floors, upholstered furniture, bed frames, under beds, around bed legs, and all cracks and crevices around the room. Change the bag after each use so the bed bugs can't escape. Place the used bag in a tightly sealed plastic bag and in an outside garbage bin.

10 Turn to the professionals, if needed. Hiring an experienced, responsible pest control professional can increase your chance of success in getting rid of bed bugs. If you hire an expert, be sure it's a company with a good reputation and request that it use an IPM approach. Contact your state pesticide agency for guidance about hiring professional pest control companies.

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For more information, visit www.epa.gov/pesticides/bedbugs/

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Bed Bugs

Protecting Yourself from Bed Bugs in Public Places

It is very unlikely, though not impossible, that a bed bug infestation will develop in an office, classroom, or other non-residential environment, such as a department store. However, these sites can serve as transfer hubs for bed bugs to hitchhike a ride into your home. Management, staff, students and workers all have roles to play in reducing the spread of bed bugs.

Steps You Can Take

- Reduce clutter. Clutter serves as an ideal habitat for bed bugs whether at home, school or office. By reducing clutter in your workplace or school, you provide fewer places for the bed bugs to hide and fewer opportunities for them to hitchhike to your home.
- Keep your belongings stowed separately from those of other people. If there is a known problem with bed bugs in the office or school, consider storing your belongings in a plastic bin.
- Be vigilant in areas where bed bugs are most likely to be found, which include break rooms, storage areas (coat closets or cubbies), offices or lounges with upholstered furniture, or areas where people may rest.
- Establish a monitoring program so that if a bed bug is found in an area the status of that area will be formally tracked.
 - Multiple sightings in the same area could indicate an infestation or multiple reintroductions from someone's home.
- Educate the staff so that they know what to do if a bug is found that appears to be a bed bug.

- Discourage panic and the stigma associated with bed bugs. These are counterproductive and can make treatment more difficult.
- Vacuum daily to pick up any stray bugs before they settle in.

If a Bed Bug is Found

- Inform management and facility staff who have the lead in any control efforts.
- Only treat if a true infestation is found with breeding bed bugs. Remember, a single bed bug is not an infestation.
 - Hire a pest professional that uses integrated pest management techniques.
 - You can minimize exposure of workers or students by applying pesticides on a Friday evening, or other time that building occupants are not present.
- Alert everyone who works in the building. Let staff know how the sighting will be handled. This allows them to take additional precautions to protect their homes as well as limiting rumors and speculation.

Last updated on November 25, 2014

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Bed Bugs

Introduction to Bed Bugs

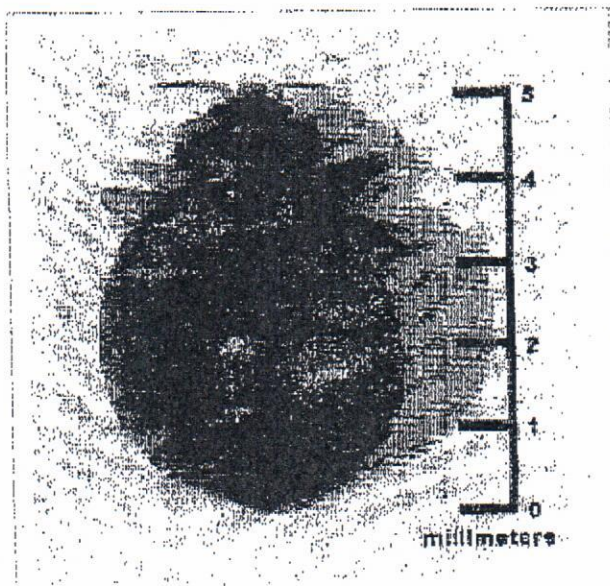


Photo credit: CDC/ CDC-DPDx;
Blaine Mathison - This image depicts a view from above of an adult, *Cimex lectularius* bed bug. Adult bed bugs are on average 5 mm long and have an oval-shaped and flattened body.

The common bed bug (*Cimex lectularius*) has long been a pest – feeding on blood, causing itchy bites and generally irritating their human hosts. The Environmental Protection Agency (EPA), the Centers for Disease Control and Prevention (CDC), and the United States Department of Agriculture (USDA) all consider bed bugs a public health pest. However, unlike most public health pests, bed bugs are not known to transmit or spread disease.

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They can, however, cause other public health issues, so it's important to pay close attention to preventing and controlling bed bugs.

Experts believe the recent increase in bed bugs in the United States may be due to more travel, lack of knowledge about preventing infestations, increased resistance of bed bugs to pesticides, and ineffective pest control practices.

The good news is that there are ways to control bed bugs. Getting good, solid information is the first step in both prevention and control. While there is no chemical quick fix, there are effective strategies to control bed bugs involving both non-chemical and chemical methods.

Bed bugs can be hard to find and identify, given their small size and their habit of staying hidden. It helps to know what they look like, since the various life stages have different forms.

More Information

- Bed bugs' appearance and life cycle
- How to find bed bugs
- Top ten tips to prevent or control bed bugs
- Myths about bed bugs
- Bed bugs as public health pests

Last updated on March 13, 2015

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Preparing for Treatment Against Bed Bugs

Whether you are hiring a pest management professional or trying to eliminate the bugs yourself, properly preparing your home is an essential first step. Taking these steps before starting out will help speed the process and reduce control costs.

- Reduce Clutter
- Make your Bed an Island
- Clean All Items in the Living Area
- Eliminate Bed Bug Habitats
- Additional information

Reduce Clutter--a Great Hiding Place for Bed Bugs

- When reducing clutter take care that you don't spread the bed bugs:
 - Don't move items from the infested area to a non-infested area.
 - Place trash or other infested items directly into plastic trash bags. When full, immediately carry the bags to an outside bin.
- Get rid of excess magazines and newspapers.
- Keep clothing off the floor.
- Eliminate all cardboard boxes (the bugs can hide in the cardboard). Replace with plastic boxes, if you need the storage.
- Get rid of clothing and other items you no longer use (but make sure they are free of bed bugs first so you don't spread them).

Make Your Bed an Island

- Move the bed at least 6 inches away from the wall.

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- Ensure all bed bugs, larvae, and eggs are removed from the bed, frame and headboard.
- Place bed-bug-proof covers (often called encasements) on your mattress and boxspring (available in home stores or online).
 - Take care that these covers have zippers that close completely and that they are sturdy enough to last for a year.
 - Any bed bugs trapped inside will eventually starve to death, and other bed bugs won't be able to hide in the bed or box spring.
- Make sure all bedding is tucked under mattress and does not touch the floor.
- Place bed bug interceptors under each leg of the bed (available in home stores or online).
 - Interceptors will trap any bed bugs that try to climb the leg of the bed. In the beginning, you will inspect them daily.
 - Plan to use the interceptors for at least a year - they will be important to your post-control monitoring efforts.
- Remove anything under the bed.
 - Store in the same room to avoid spreading the infestation.
 - Inspect and clean or discard as appropriate.

Clean All Items Within a Bed-Bug-Infested Living Area

- Heat treat clothing, bedding, and other items that can withstand a hot dryer (household dryer at high heat for 30 minutes), which will kill bed bugs and eggs.
 - Washing alone might not do the job.
 - Store clean items in a sealed plastic bag to ensure they remain bug free
- Physically inspect and clean furniture, baseboards, behind outlet and switch covers, etc. to remove visible bed bugs or eggs.
- Use sealed plastic bags to transport any items that are being moved from one area to another (e.g., clothing or other items to be heated in the dryer).
- Remove and clean drapes and the drapery hardware.
- Look for bed bugs, eggs, and other bed bug evidence (e.g., shed skins, hatched eggs) on furniture and remove--this will also help in evaluating treatment success.
- Vacuum thoroughly, then remove and dispose of the vacuum bag:
 - Vacuum up some talc (e.g., baby powder), to prevent bugs escaping.
 - Seal the vacuum bag in a plastic bag.
 - Place in trash outside.

Eliminate Bed Bug Habitats

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- See "reduce clutter."
- Caulk cracks or crevices around baseboards.
- Repair any wallboard damage, ensure wallpaper is not loose.
- Check electrical outlets and wall switches for evidence of bed bugs.
 - Clean if needed.
 - Tape or caulk the rims to prevent bed bugs from getting behind the plates.

Additional Information

- Preparing Your Home for Bed Bug Treatment (PDF) -- North Carolina State University [PDF](#)
- Preparing Your Home for Bed Bug Treatment -- Michigan State University [PDF](#)

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Bed Bugs

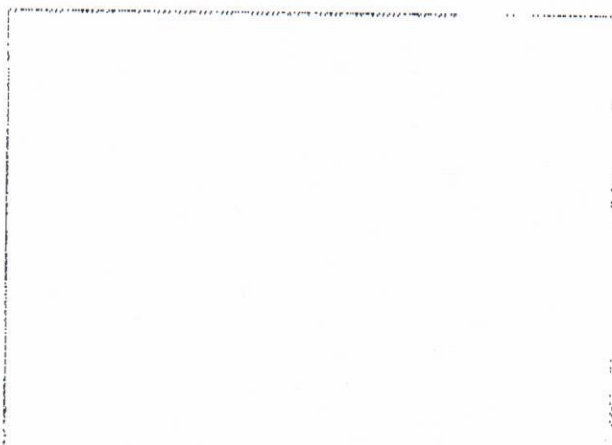
Bed Bugs Appearance and Life Cycle

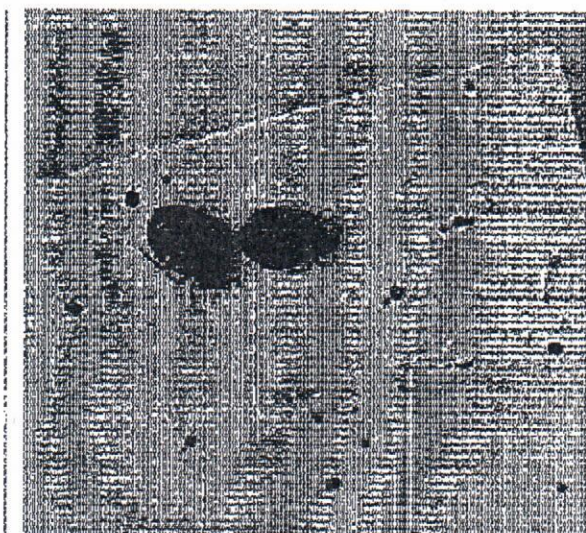
Knowing what to look for is the first step in identifying and controlling bed bugs. There are many bugs that look like bed bugs so an accurate identification is a critical first step to avoid costly treatment for the wrong bug. The types of bugs that look like bed bugs will vary somewhat depending on your region of the country, but photos and descriptions of common look-alikes have been compiled by researchers:

- Bat Bugs, Bed Bugs and Relatives (Colorado State University) [\[EXT\]](#)
- Bed Bugs and Lookalikes (PDF) (1 pp, 619.93 K, About PDF) (Connecticut Agricultural Experiment Station) [\[EXT\]](#)
- Is it a Bed Bug, Cockroach or Carpet Beetle (PDF) (1 pp, 63.55 K, About PDF) (New York City Department of Health and Mental Hygiene) [\[EXT\]](#)

Your state cooperative extension service office [\[EXT\]](#) may also be able to help with identification.

Appearance of Bed Bugs (*Cimex lectularius* L.)





Two adult bed bugs in a petri dish
(courtesy of Kim Jung)

Adult bed bugs, in general, are:

- about the size of an apple seed (5-7 mm or 3/16 - 1/4 inch long);
- long and brown, with a flat, oval-shaped body (if not fed recently);
- balloon-like, reddish-brown, and more elongated (if fed recently);
- a "true bug" (characteristics of true bugs include a beak with three segments; antenna that have four parts; wings that are not used for flying; and short, golden-colored hairs); and
- smelly, with a "musty-sweetish" odor produced through glands on the lower side of the body.

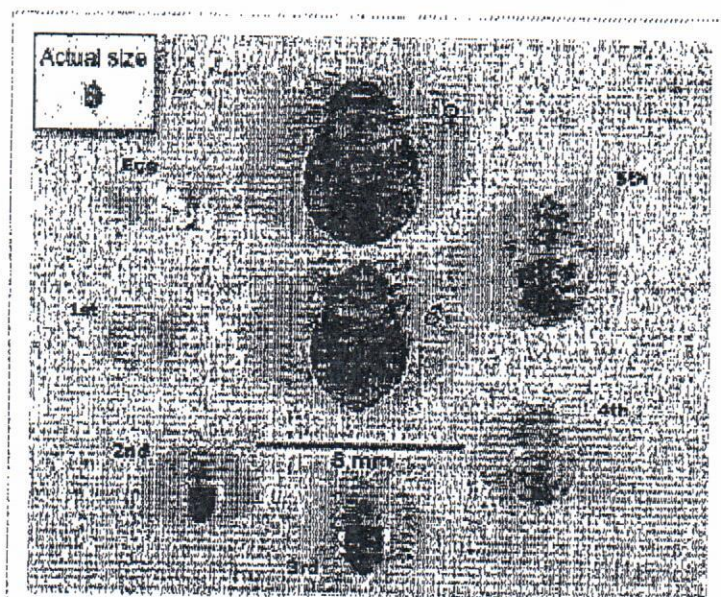
Young bed bugs (also called nymphs), in general, are:

- smaller, translucent or whitish-yellow in color; and
- if not recently fed, can be nearly invisible to the naked eye because of coloring and size.

Bed bug eggs, in general, are:

- tiny, the size of a pinhead;
- pearl-white in color; and
- marked by an eye spot if more than five days old.

Bed Bug Life Cycle



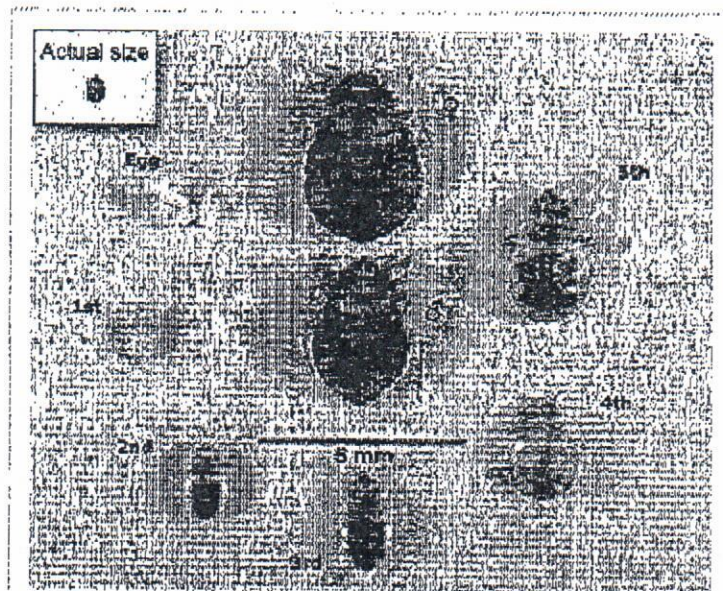
Life cycle of the bed bug. Photo Courtesy of Stephen Doggett, Department of Medical Entomology, Westmead Hospital, Sydney, Australia

The life cycle of a bed bug is shown in the photograph below. During its lifetime, a bed bug will go through the following stages (Starting from the top left, moving counterclockwise):

- Eggs (1mm).
- 1st stage nymph (1.5 mm).
- 2nd stage nymph (2 mm).
- 3rd stage nymph (2.5 mm).
- 4th stage nymph (3 mm).
- 5th stage nymph (4.5 mm).
- Unfed adult female.
- Unfed adult male.

Last updated on March 13, 2015

Bed Bug Life Cycle



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- Unfed adult female.
- Unfed adult male.

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