



Extension FactSheet

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Bat Bugs

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Bat bugs are bloodsucking insects. They are free-living parasites (ectoparasites) of bats, but they will bite humans in the absence of their primary hosts. In Ohio, most of the specimens from homes are bat bugs (*Cimex adjunctus*) rather than bed bugs (*Cimex lectularius*). However, in the past decade, bed bugs have begun making a comeback across the U.S. and have been increasingly reported in Ohio, although they are not considered to be a major pest. Information on bed bugs is provided in OSU Fact Sheet HYG-2105-04. Related cimicids, swallow and swift bugs, are encountered infrequently.

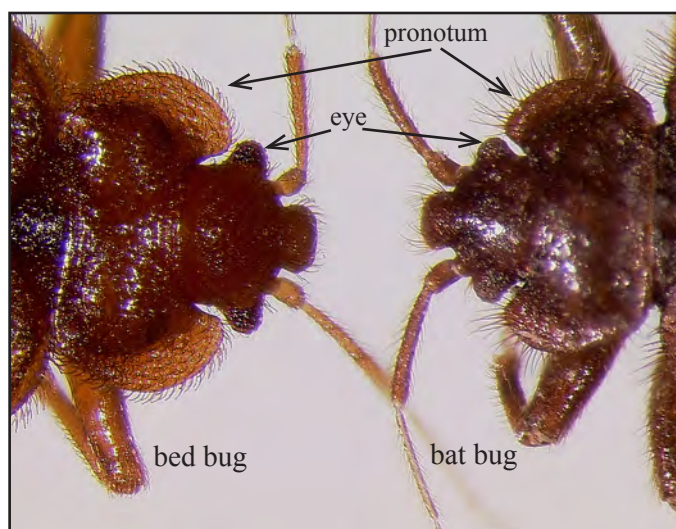
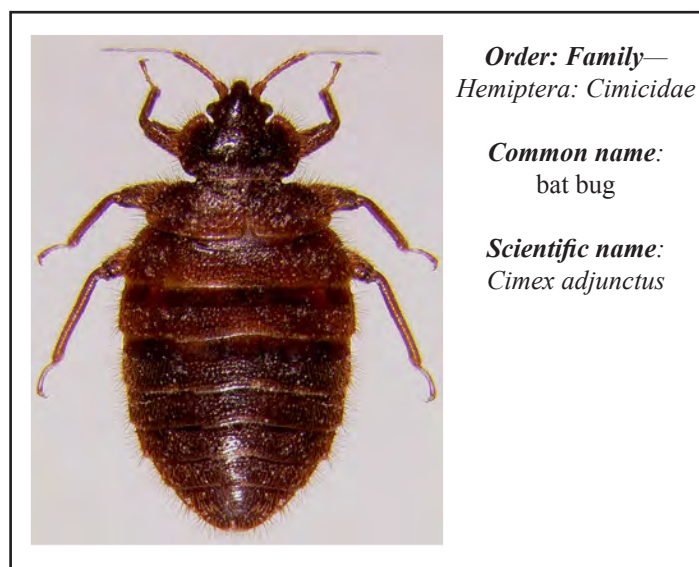
Distribution

The family Cimicidae has a world-wide distribution.

Identification

All members of the family Cimicidae are small, oval-shaped, and extremely flattened if they have not fed recently. After feeding, their body appears plump and dark-colored from the blood meal. All have small, stubby, non-functional wing pads. They have piercing-sucking mouthparts that appear beak-like.

It is important to be able to differentiate bat bugs from other cimicids because effective control relies on eliminating their primary host (bats). Bat bugs and bed bugs are practically indistinguishable to the naked eye, even to a trained entomologist. Microscopic examination is needed to tell them apart. Adults of both are about ¼ to 3/8 inch long and reddish-brown. A distinguishing feature is that the fringe hairs on the pronotum (the upper covering of the



The fringe hairs on the pronotum of the bat bug (R) are as long or longer than the width of the eye, whereas these hairs are shorter in the bed bug (L) [photos by N. T. Gallagher]

Quick Facts

- Bat bugs are bloodsucking insects that are parasites of bats.
- Bat bugs will bite humans in the absence of their primary host (bats).
- Effective control of bat bugs relies on removing and excluding bats (or alternative hosts such as birds and rodents) from the structure, then applying an insecticide to host harborage areas.
- Bat bugs look very similar to bed bugs, and microscopic examination is needed to tell them apart.

thorax) of the bat bug are as long or longer than the width of the eye, but are shorter in the bed bug.

Life Cycle

Adult bat bugs may survive for a year or more without a meal in cool environments, but blood feeding is required by the female in order to produce eggs. The females lay eggs on rough surfaces and in cracks, usually in the same areas where the bugs hide. Eggs hatch in one to two weeks, and nymphs can feed immediately. Nymphs must acquire a blood meal in order to molt. Younger nymphs are practically colorless unless they have fed, in which case the blood meal creates a highly visible dark spot in their digestive tract. The exoskeleton becomes darker as the bug matures.

Development from egg to adult averages 1.5 months, but developmental rates vary depending on food availability and environmental factors. Development from egg to adult may take from 2 weeks in warm, favorable conditions to more than 15 weeks in less favorable conditions. Multiple generations may occur within a year, since bat bugs can continue to breed throughout the season in the warmth of a structure.

Habits

Bat bugs feed on all of the common bats in Ohio, but they are most frequently associated with the big and little brown bats, which roost in colonies. Although bats are their primary host, these bugs also may feed on alternative hosts including birds and rodents. Bat bugs will bite humans in the absence of their primary hosts.

Bat bugs hide in dark, protected sites and they prefer tight, narrow retreats. Bat bugs typically are found in cracks and crevices in bat roosting areas, rather than on the hosts themselves, but they make repeated visits to the host to obtain a blood meal.

Home Invasion

The main means of dispersal for bat bugs is phoresy (hitching a ride on a bat to a new location). Bat bugs enter homes by clinging to the fur of their host animal.

Typically, bat bug infestations originate from bat populations established in attics, wall voids, unused chimneys, or uninhabited portions of the house. Bat bugs typically do not wander far from occupied bat roosting sites where they have easy access to food.

If their normal hosts are eliminated or vacate the area, bat bugs will seek other sources of food and may crawl about and invade living areas within the house. In several cases where bats had been recently excluded (1-4 weeks) from a home or apartment, bat bugs were observed crawling out of either cracks or openings in the ceiling; or from a wall void next to a window (H. Harlan, pers. comm.). These bugs apparently were harboring well above floor level. Bat bugs may eventually move to harborage sites that are much closer to sleeping humans. These potential harborages include cracks and crevices in the mattress, bedding, and bed frame. Bat bugs also may seek harborage within gaps in woodwork, trim, and furniture, or inside drapery pleats, or behind peeling wallpaper, picture frames, and wall hangings.

Feeding Behavior

Bat bugs typically feed while the host is sleeping. The bug pierces the skin with its extended mouthparts, and it injects saliva as it probes for blood vessels and feeds on blood. Immature bugs can acquire a blood meal in a few minutes, whereas an adult will feed for ten to fifteen minutes. They then crawl to a hiding place to digest their meal. When they are hungry, bugs will again travel to find a host.

Injury to Humans

Humans may not feel the bite of a bat bug, though their bite is reportedly more painful than that of a bed bug. Many people develop an allergic reaction to proteins in the injected saliva from the bug. Humans experience varying degrees of immunological reactions to bug bites, but a welt or lump at the site of the bug bite and severe itching are the most common reactions. Bug bites cause a colorless welt that may become inflamed; in contrast, mosquito- and flea-bites have dark red centers. Often, a series of two to three welts occur in close proximity to each other. Scratching the welts may cause them to become infected. Discomfort from bug bites may last a week or more. Bat bugs apparently are not natural vectors of human pathogens.

Control Measures

Legal Considerations—Bats are non-game wildlife and therefore legally cannot be killed. Specific questions should be directed to the local department of wildlife or a pest management company.

Integrated Pest Management—Control of bat bugs can be complicated because it relies on the control of both the bugs and their regular hosts. If the host bats are not eliminated, bugs are likely to reappear. Simply spraying to kill the bat bugs may provide a temporary solution but is unlikely to eliminate the problem. Control is best achieved by following an integrated pest management (IPM) approach that involves multiple tactics, such as preventative measures, sanitation, and chemicals applied to targeted sites. Severe bat bug infestations are usually best handled by a licensed pest management professional.

Prevention—Weatherproofing the home will prevent roosting by bats and therefore prevent the occurrence of bat bugs. Caulk cracks and crevices in the building's exterior and repair or screen openings to exclude bats and also to exclude alternative hosts such as rodents and birds. Pay particular attention to bat entry points. Bats most commonly enter a building at the roof-wall joint, under loose fascia boards, unscreened or broken attic vents, and other cracks resulting from building deterioration.

Host Removal and Exclusion—Bats and other hosts should be removed and excluded from the home to more permanently remove the sources of bat bugs. Coordinate this first step with insecticide treatment of harborage areas, because an increased movement of bugs into the living area may occur after host removal.

If bat bugs are a problem, it is necessary to exclude bats from roosting in the building. Exclude bats during the late fall after they have left the building. DO NOT attempt to exclude bats between late April and mid-August

when young bats are unable to leave the roost. They can become trapped indoors, die, and create an odor problem. Secondary insect pests also may invade to feed upon the dead bats. In order to prevent trapping bats in the building, exclusion effort typically should take place during September in Ohio.

Bat exclusion involves first locating the entrance/exit holes. This is best done at dusk as the bats are leaving to find food. Sometimes the holes that bats use to access structures may be very small--bats can squeeze through an opening about 3/8-inch wide. Dark, greasy smudge marks may be evident on the wall just below the region where the bats are entering and leaving the building. After entrance/exit holes have been located, the remainder of the house also should be inspected for cracks and crevices that could provide alternative entry points. Caulk gaps or replace mesh in vents or hire a contractor to weatherproof the house.

After sealing all of these cracks and crevices in the house, affix a piece of mesh fabric (approximately 1.5-2 feet long) over the bat entrance/exit holes. This piece of fabric should be affixed to the top and two sides so that it covers the holes, but the fabric should remain free at the bottom. As the bats encounter the fabric, they are able to crawl down it and exit, but are unable to navigate their way back inside. The holes can be sealed once you have ensured that all of the bats have made their way out.

Insecticides—At the same time that host animals are removed and excluded from a structure, it is necessary to treat their harborage areas with an insecticide. Treat the original site of infestation, typically bat roosting areas in attics, unused chimneys, or uninhabited portions of the house. A total-release aerosol "bomb" can be used, but should not be the sole insecticide treatment. Residual insecticides (usually pyrethroids) are useful in attics to control bat bugs; they typically are applied as spot treatments to cracks and crevices. Dust formulations are useful to treat wall voids and attics. Pest-strips containing dichlorvos can be used in attics, but they should not be placed in living areas of the home.

In living areas, residual insecticidal treatments should be directed at cracks and crevices that bugs can use to migrate from the attic, such as areas around light fixtures and ceiling moldings. Insecticide treatments also should target sites where the bugs are hiding, such as cracks and crevices in window frames, door frames, electrical boxes, floors, carpet tack boards, baseboards, and furniture, as well as possibly the bed frame and box springs. Increased penetration of the insecticide into cracks and crevices can be achieved if accumulated dirt and debris are first removed using a vacuum cleaner. Avoid using highly repellent formulations, which

can cause bugs to scatter to many places. Repeat insecticide applications if bugs are present two weeks after the initial treatment (it can be difficult to find all of the hiding places, and hidden eggs may have hatched). Most aerosol “bombs” are ineffective by themselves for controlling bugs.

Do not use any insecticide on a mattress unless the product label specifically mentions such use. Note that very few insecticides are so labeled. If using an appropriately labeled insecticide on a mattress, take measures to minimize human pesticide exposure. Apply the insecticide as a light mist to the entire mattress, opening seams, tufts, and folds to allow the chemical to penetrate into the bugs’ hiding areas. Allow the treated surface to dry completely before use. Do not sleep directly on a treated mattress; be sure bed linens are in place. Do not treat mattresses of infants or ill people.

No insecticides are labeled for use on bedding or linens.

Sanitation—Sanitation measures include frequently laundering bedding and clothing, vacuuming the mattress and premises, and cleaning and sanitizing dwellings. Bedding and linens should be dry cleaned or laundered in hot water and dried using the ‘hot’ setting. After vacuuming, immediately place the vacuum bag in a plastic bag, seal it tightly, and discard it in a container outdoors—this prevents captured bugs from escaping back into the home. A stiff brush can be used to scrub the mattress seams to dislodge bugs and eggs. Discarding the mattress is another option, although a new mattress can quickly become infested if bugs are still on the premises. Steam cleaning of the mattress is not generally recommended because it is difficult to get rid of excess moisture within the mattress, which can lead to problems with mold, mildew, house dust mites, etc.

After the mattress is vacuumed or scrubbed, it can be enclosed in a zippered mattress cover such as that used for house dust mites. Any bat bugs remaining on the mattress will be trapped inside the cover. Leave the cover in place for a year or so since bat bugs can live for a long time without a blood meal.

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