

# Bed bugs are a global problem, yet we still know little about how they spread

October 26 2023, by William Hentley

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Credit: Dr Richard Naylor, [CC BY-SA](#)

Bed bugs have recently [exploded into the limelight](#) amid widespread reports of a major outbreak in Paris. The more people share photos of bed bug bites on social media, the more concerned we feel. That's

understandable, but the really worrying thing is the missing information—there is still no publicly available data about the infestations in Paris.

Indeed, data that confirms or denies the location and date of *any* bed bug cases is notoriously hard to find. The vast majority of people around the world go to the [private sector](#) for pest control, but data from this sector is often classed as "commercially sensitive" and not usually shared for research purposes.

Although it is not clear if the scale of the problem in Paris is real or [social media](#) hype, one thing is true: [bed bugs](#) are not just in the French capital. In fact, they are present in [almost all human settlements](#)—there have been reports of bed bugs living with humans since our history began, with remains found in [ancient Egypt](#).

Unlike a lot of other countries, the UK does at least have some data about [bed bug infestations](#), as most local authorities [do some bed bug control](#) for commercial and domestic infestations. They are a good source of data due to the powers of the UK's [Freedom of Information Act](#).

## A seasonal spike

I have researched the number of confirmed bed bug cases treated by local authorities in three major UK cities: Birmingham, Manchester and Sheffield. I used data on confirmed bed bug cases per month between 2009 and 2015, and ran this through a [statistical model](#) called a [generalized additive mixed-effect model](#) (GAMM), which accounted for the size of each city and random variation between years.

The results showed a significant peak in bed bug cases around August and September each year, and also that bed bug numbers were steadily

increasing. The same seasonal pattern and year-on-year increase was seen in the US city of Philadelphia between [2009 and 2011](#), and [in two Chinese cities in 2012/13](#). In New York between 2010 and 2020, the seasonal pattern was the same but the numbers [did not increase](#).

More recent studies have looked at a region's internet search history as a proxy for the prevalence of bed bug cases. When you find what you think is a bed bug, the first thing most people do is search the internet for answers. Studies [from the US](#) and [Australia](#) both found the same seasonal pattern in internet searches for bed bugs, although the pattern in Australia was the opposite to the northern hemisphere.

However, in order to tackle infestations, we need to understand more about these creatures.

## **What we know about bed bugs**

Bed bugs are small, flightless insects that feed on [human blood](#). There are several species, but the one most people know is called [Cimex lectularius](#). The Romans called them *Cimex*, which means bug. It was much later in 1758 that the natural historian Carl Linnaeus added "lectularius" to their name, meaning bed or couch.

Our blood is their main source of nutrition, but they will [feed on other animals](#) if they have to, including birds, pets and bats. Bed bugs have a complex gut microbiota, which helps them extract all the nutrients they need from our blood.

Juveniles require a [blood meal](#) in order to develop from one life stage to another—so, to become adult, each bed bug will need [at least five blood meals](#). Adult bed bugs, though, [can survive an entire year](#) without a meal.

They can't fly. As you can imagine, walking doesn't get them very far,

but it does allow them to spread around apartment blocks. And bed bugs hitch-hike on humans to move greater distances, although scientists can't agree about exactly how they do this—it's one of the unanswered questions about their ecology. People assume they travel on luggage, but it's never been proven.

My [previous work in 2017](#) proved for the first time that they aggregate in dirty clothes in the absence of humans. My team put bed bugs in corrugated filter paper in the center of a room, with clean and dirty clothes evenly spaced around them. The bed bugs all left the filter paper, and made a beeline for the dirty clothes nearly every time. This might explain how they get into our suitcases when we are traveling.

## **How to stop their spread**

If we could understand more about bed bug dispersal and spatial distribution, we would stand a better chance of stopping their spread.

New York, which suffered a major outbreak [in the 2010s](#), has shown it's possible to tackle bed bug numbers if the public and private sectors work together. Pest control agencies [published data showing the scale of the problem](#) and [submitted a report](#) to officials with their recommendations for dealing with the outbreak.

According to the same [report that confirmed the 2010 outbreak](#), bed bug numbers in New York are declining. The researchers believe this is because of the pest management policies New York officials introduced from 2010.

First, they launched a [non-emergency helpline](#) for the public to call if they found bed bugs. The city also passed a policy where, from 2010, landlords were required to [report bed bug infestations](#) to prospective tenants. Since 2017, landlords must report all units that have bed bug

infestations both to the [local authorities](#) and any residents sharing the same building as the infestation.

The future for bed bugs is unclear. Those we see today [are resistant](#) to most pesticides, are [masters of subterfuge](#), and are not going anywhere. They have [co-evolved with humans](#)—so our best option for reducing their impact on our lives is for researchers and [pest control](#) professionals to spend less time trying to kill them, and more time trying to understand how they function within our world. Maybe then, we will work out a way to limit or even remove them from our homes for good.

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