Proceedings of the Eleventh International Conference on Urban Pests 2025
AF-Borgen, Academic Society, Lund, Sweden
William H Robinson, editor

USING PASSIVE BEDBUG MONITORS TO REDUCE GUEST COMPLAINTS ABOUT THE COMMON BEDBUG IN THE HOSPITALITY INDUSTRY

DAVID CAIN AND TERRY SHOULDERS
Bed Bugs Limited, 12 Hermitage Lane, London, SE25 5HH

Abstract *Cimex lectularius*, continues to be a global issue spreading across the world and impacting the hospitality industry above all others[1]. While many labs have developed solutions the field results have been less than efficacious, often because of design failures that do not take into account the natural behaviours of bed bugs. At the same time, we see continued resistance in field populations and treatment failures. Since 2009 we have been working towards an approach that puts early detection at the forefront of control which has enabled us to fix infestations with nothing more than a vacuum cleaner. Having developed the products and processes to optimise detection our clients have confirmed lower guest complaints, in some cases to none. Creating a new paradigm where Hotels and pest controllers work in partnership to ensure that issues are tackled at the earliest possible stage where they have minimal impact on the site's operational efficiency. This sustainable approach meets both the clients desire for lower guest complaints but also produces a more reliable business model for pest control companies, whilst working towards everyone's target of being more green and environmentally conscious. The system has a negligible carbon footprint in comparison to other approaches offering a genuinely climate friendly solution.

Key words Hotel, detection, resistance

INTRODUCTION

I am David Cain a Molecular Biologist who became a pest controller following a car crash. I quickly switched my obsession from DNA sequencing to bed bugs and wrote one of the first non-academic websites on the subject in 2005 and launched full time bed bug business in 2006, the first of its kind since Tiffin & Sons 1655. Why bed bugs? They are one of the world's oldest parasites having out lasted the dinosaurs(Scarpino and Althouse, 2019). In 2014 we switched all our processes to a green strategy based on super-heated steamer technology namely the *Cimex* Eradicator (Polti, Italy) since this date we have been 100% green. We have both local and remote clients with either self-sufficient and/or supported models. We tailor our solutions to our clients' needs through a modular approach capable of being adapted and configured as needed so long as its chemical free. Our methodology can be broken down into five key stages[3]:

Figure 1. Process flow for onboarding Passive Monitoring clients.

The key aspect of our process is the passive bed bug monitor, this is a harbourage-based monitor which utilises the natural behaviour of bed bugs to seek optimal harbourages close to sources of food. Faecal traces are left on the detection skirt when bed bugs enter the harbourage. Through regular and scheduled inspection and checking can detect bed bugs soon after introduction. Weekly checking is optimal in high turnover locations but monthly is a minimum for efficient detection.

MATERIALS AND METHODS

Four commercial sites were selected for long term monitoring using Passive Monitors (patents GB2463953, GB2470307). After screening and treatment one monitor was installed at the head of each bed in the hotel using the published protocol. Previous levels of infestation were established by checking records and through observations during the screening and installation.

Table 1. Hotel ID, Number of beds, threshold level of infestation in previous years.

Hotel ID	Number of beds in hotel	Number of infestations in previous year	Checking interval	In house or external checks
A	187	6	Monthly	External
B	240	50	Monthly	External
C	336	4	Weekly	In house
D	40	5	Weekly	In house

In house checks were conducted by the hotels trained housekeeping staff with a recommended second person monthly quality assurance which was also logged on the product label. External checks were conducted by our trained staff who with experience could screen 250-300 monitors per day. The system also received a final quality assurance check when the monitors were replaced on an annual basis. Sites A, B and C started in 2012 with site D starting in 2016.Passive Bed Bug Monitors provided to hotels are labelled with branding for www.HotelEnvironmentalMonitors.com . The grid on the label of the monitor allows tracking of the task as all rooms should match at the end of each week. Data was collected and analysed in MS Excel.

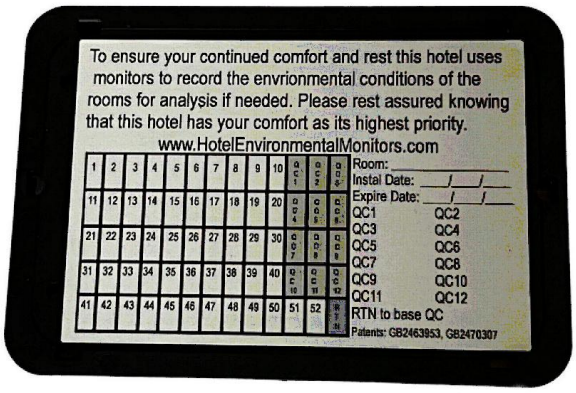

Figure 2. Hotel labelled Passive Monitor

RESULTS AND DISCUSSION

The table below (Table 2) illustrates that every location detected infestations of bed bugs after the system was installed, most of these were prior to guest complaints and none of the infestations resulted in spread to other rooms on site. Infestations were confirmed prior to eradication using the Cimex Eradicator (Polti, Milan, Italy) and Diatomaceous Earth (DE – Bed Bugs Limited, London, UK).

Table 2. Number of infestations detected per site between 2012 and 2024.

	Number of infestations detected			
Year	A	B	C	D
2012	0	20	0	
2013	0	1	0	
2014	0	0	0	
2015	1	1	0	
2016	0	1	0	0
2017	2	1	0	1
2018	1	0	1	0
2019	0	4	1	0
2020	0	2	4	0
2021	0	0	1	0
2022	1	1	1	0
2023	0	1	0	0
2024	0	0	3	0

ACKNOWLEDGEMENTS

We would like to thank our clients for having the confidence to try something so new and different and for their permission to share this data. Without the partnership we create between our team and theirs bed bugs would continue to be a major stress within their organisations.

REFERENCES CITED

Roth, Steffen et al. 2019. Bedbugs Evolved before Their Bat Hosts and Did Not Co-speciate with Ancient Humans. Current Biology, Volume 29, Issue 11, 1847 - 1853.

Scarpino, S.V, B. M. Althouse BM. 2019, Uncovering the hidden cost of bed bugs. Proc Natl Acad Sci 16(15):7160-7162. doi: 10.1073/pnas.1902404116. Epub 2019 Mar 22. PMID: 30902893; PMCID: PMC6462087.

Advances in the biology and management of the modern bed bug Wiley Press 2016