

All things bed bug



David Cain of Bed Bugs Ltd

In our first report, David Cain of Bed Bugs Ltd, based in London, recounts his impressions.

The North America Bed Bug Summit has been running for three years now and this year saw a change to the format and a move to Las Vegas, so I packed my bags and headed-off to the neon encrusted city to see what changes had been put in place and what was new.

Now an annual fixture in the pest control calendar, the Bed Bug University North American Summit was this year held on 6 and 7 September in Las Vegas, USA. To keep us in touch with activities, **Pest** invited two well-known international bed bug experts to present their views on proceedings.

The format had changed to a two-day event instead of the previous three days which was one of the first plus points. Not even I relish the thought of three long days of just bed bugs.

Gold presentation from Sheffield University

The first day was definitely the better of the two with an excellent presentation by Dr Michael Siva-Jothy of Sheffield University, who detailed his group's extensive pure research which clearly demonstrated that the UK leads the field. Picking-up on an Olympic theme, his paper deserves the gold medal. Covering immunity, symbioses, ecology and behavioural biology this set an expectation that if the other presentations were on par, then it would be a truly enlightening few days. Sadly the event seemed to have peaked at this stage, leaving me thinking it was a shame that this presentation has not yet been made in the UK. Later in the day, a presentation from Dr Klaus Reinhardt, also of Sheffield University, covered both trends in bed bug populations since 1900 and some fascinating information on the reproductive adaptations and the role of traumatic insemination. This helped explain why bed bugs are such effective colonisers.

Silver to Australia

My silver medal from the event goes to Stephen Doggett from Westmead Hospital, Australia for his presentation looking at the clinical relevance of bed bugs. Both the physiological and psychological impact of bed bugs, plus the analogy and comparison to some of the more dangerous Australian native species, helped illustrate why bed bugs have a lower clinical impact in Australia compared to the US – a country where the anxiety brought by even a single introduced bed bug can be devastating to some people's lives.

An individual bronze goes to Dr Ed Vargo, of North Carolina State University, for his molecular work looking at genetic variations at both the local and global levels. Although my personal experience, and knowledge of genetic science, does cast some doubt as to the validity of much of the local (building) level data they have so far developed. But this did result in a great one-on-one discussion.

These high points were countered by some lows. These included the introduction of a new protocol to 'control' an infestation, setting management of the issue as an acceptable goal rather than eradication. This I am sure will go a long way towards continuing to erode consumer confidence in pest management in the US. It is something I hope we don't see in the UK. If you can't offer a professional service to resolve people's infestations you would be better off not working on bed bugs, as consumers are unlikely to view this favourably.

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© Stephen L Doggett
Dr Mike Siva-Jothy, left, from Sheffield University with our second contributor and 'silver medallist', Stephen Doggett

Our second contributor is Stephen Doggett from the Department of Medical Entomology at Westmead Hospital in Australia.

Sadly, the Aussie only gets the silver...again...which has been the trend for my country folk this year! Actually, I would like to thank David for his kind words about my clinical lecture and echo his thoughts on the sterling efforts of both Mike Siva-Jothy and Klaus Reinhardt for their presentations focusing on bed bug biology. The fact is that biology is the basis of Integrated Pest Management and such knowledge is essential in order to develop the most appropriate strategies for combating any pest, but especially bed bugs where management technologies have their limitations.

Beyond the above, two of the other highlights for me at the Summit were the papers by Dr Ed Vargo and Richard Cooper from Bed Bug Central. Their research has profound implications for the pest control industry and will make us rethink how bed bug management is undertaken in the future.

Modern molecular techniques

In his research, Dr Vargo's group has been utilising modern molecular based techniques (called 'microsatellite markers') to examine the interrelationships of bed bug populations. Much of this work has been recently published in the prestigious journal, *The Journal of Medical Entomology*. They collected samples of bed bugs from multiple units within the same apartment complex and found that the insects tended to display a high degree of relatedness. They suggested that infestations in whole buildings often originate from a single female! Many bed bug researchers have suspected that treatment activities (in particular, poor management practices) do result in the spreading of an infestation, and these findings confirm this suspicion.

In the US, the name Richard (Rick) Cooper is synonymous with bed bugs. Two of the more important issues Rick has recently been assessing relate to how quickly bed bugs spread and the success of management efforts. To establish how quickly bed bugs can spread throughout a building, Rick captured bed bugs, marked and subsequently released the insects (this was in a deceased person's home and so there are no ethical issues with releasing biting arthropods). Marked bed bugs were found in four adjoining units five days later, even in units across the hall. Thus the insects spread much quicker than what we previously assumed.

Arguably the greatest challenge in bed bug management is determining when an infestation is actually eradicated. After a number of companies declared that control was achieved and had terminated their treatment programme, Rick attempted to establish

just how successful they actually were. He examined this through implementing an intense monitoring programme by placing up to 30 ClimbUp Interceptors throughout the treated apartments and monitored daily for activity. Quite worrying is that in 58% of the treated units, bed bugs were detected (remember that all of these were previously declared eradicated!).

The research by both groups marries quite nicely. Rick highlights the need for post control monitoring once an infestation is thought to be eradicated, even in adjoining units, while Ed Vargo has shown that infestations throughout buildings tend to have a common origin. As final food for thought, there is a very serious implication here for the industry, namely that the origins of an infestation can now be elucidated with modern molecular techniques.

This means that pest managers can now be held accountable for failed treatments and the subsequent dispersal of infestations, along with the associated costs to achieve final eradication. This could amount to tens to hundreds of thousands of pounds in an apartment complex. Thus it is in your pecuniary interest to ensure that you do the job correctly in the first place!



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Dr Klaus Reinhardt, left, from Sheffield University with Dr Mike Potter from the University of Kentucky. No USA bed bug event would be complete without Dr Potter!

Action taken by US authorities

Just three days after the Bed Bug Summit closed, the US Federal Trade Commission (FTC), whose aim is to prevent business practices that are anti-competitive or deceptive or unfair, took action on behalf of consumers in the war against bed bugs.

The FTC filed charges against two marketers of remedies for bed bug infestations, who had allegedly failed to back-up over-hyped claims that they could prevent and eliminate infestations using natural ingredients, such as cinnamon and cedar oil. One had also allegedly made misleading claims that its products were effective against head lice.

Is the UK any different?

Here in the UK, things appear little different. A quick web search throws-up such sites as Blitz (www.b3blitz.com) or BedBug Buster (www.bedbugs-buster.com) where pictures give the impression that bed bugs, dust mites and, on one, head lice and mosquitoes are controlled.

Such phrases as: 'Specially formulated to kill bed bugs naturally on contact. It couldn't be easier, simply point and spray and we guarantee a 100% kill in just 48 hours' are used. Or: 'Easy to use, no need to call in pest control companies who can be both invasive and distressing'.

On neither site is it clear what active ingredient is involved.