The independent UK pest management magazine

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Issue 52 August & September 2017





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As the industry's only independent magazine, **Pest** aims to deliver a mix of unbiased news, impartial advice and topical technical features. We are committed to being as inclusive as possible covering every sector of the pest management industry.

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Climbing ability of bed bugs explored

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Professional pest market remains buoyant

With the world around us currently pretty dire, Brexit and the antics in the White House being two good examples, it's remarkable to be able to report such a sense of optimism in the professional pest control market - both in the UK and in the world at large.

In this issue we feature the results of this year's National UK Pest Management Survey. This is the seventh year we have undertaken this survey and, once again, a very positive feeling prevails. Nearly 80% of respondents predicted that prospects for the year were either good or very good.

We have reported the overall findings on pages 14 & 15. Then, new this year, to make them more relevant to each sector, the results for each user type are recorded separately - so self-employed pest controllers are on page 17, local authorities on page 18 and companies on page 19.

We were lucky to attended the 9th International Conference on Urban Pests (ICUP) in Birmingham - it was a shame if you missed it. But remember the event in three years time

will be in Spain – so not that far to travel. Several of our features and news items from the event feature in this edition - our annual bed bug special issue.

Janen Hela

Interpreting the news at www.pestmagazine.co.uk

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Killgerm achieves environment standard



Proud Killgerm company chemists, Philip Dalgliesh (left) with Stephen Leahy

Pest control distributor, Killgerm, has recently been awarded ISO 14001:2015 for Environmental Management Systems (EMS).

This international standard maps out a framework that a company, or organisation, can follow to set up an effective environmental management system. So, over the last nine months there has been intense internal activity to align Killgerm's existing environmental practice with the international ISO14001 standard.

A significant element in the control arrangements has been achieved via the company's rigorous customer training sessions and stewardship policies. In addition, its waste disposal scheme is a responsible way for customers to dispose of unused products and wastes arising from pest control activities.

Company chemist, Philip Dalgliesh, commented: "We're proud to be recognised for all of our environmental hard work and to be awarded with this ISO 14001 is a great honour. We take our environmental responsibilities extremely seriously and they form an essential part of our product support and customer training activities."

No stopping Rentokil... Rollins... Anticimex

The Rentokil acquisitions trail continues unbounded. In the company's interim financial statement released on 27 July it reported a boost to its profits by more than 637% in the last six months, with the firm's pre-tax profits standing at £592.9m in the first half of 2017, up from £80.4m in the same period last year. The company's strategy of concentrating on the core businesses of pest control and cleaning in global growth markets is reaping rewards.

In the previous six months, Rentokil acquired 25 businesses – 19 in pest control. With a further \pounds 50m tucked in his back pocket, CEO Andy Ransom forecast the spending spree to continue.

Having already 'bought' their way to the number three position in the US, it comes as no surprise to record the acquisition, in early August, of Batzner Pest Control (ranked 51st in the *Pest Control Technology (PCT)* Top 100 list of US pest control companies) followed more recently by the acquisition of Fischer Environmental Services (ranked 60th by *PCT*).

Not to be outdone, Rollins (the company behind Orkin) and the largest pest control servicing business in the US, acquired NorthWest Exterminating (ranked 17th by *PCT*).

Another European company making a splash in the US is Swedish Anticimex. Since the beginning of June this year, the company has acquired no less than four US pest control companies. This is in addition to purchases this year in Holland, Spain, Malaya, Portugal and Belgium. They have also acquired the remaining 80% share in WiseCon, the Danish company most recently known for its electronic rat traps and monitoring systems.

There certainly seems to be money in pests!



Cleankill scoops national award

Staff at Surrey-based Cleankill Pest Control were celebrating after they won their first national award – the Service Provider of the Year category of the Association of Residential Managing Agents (ARMA) inaugural ACE Awards. The awards ceremony, held on 7 July at Tobacco Dock in London's east end, was attended by 450 industry professionals. The awards were introduced to celebrate excellence and exceptional achievement by the UK's leading residential managing agents, their suppliers and the work of their people in improving the lives of over a million leaseholders across the country.

Cleankill's managing director, Paul Bates, said: "We've been shortlisted for many national awards such as Investors in People and the British Institute of Facilities Management as well as receiving a special highly commended award in the inaugural British Pest Management Awards. But, it is the first time we have won one, so we are absolutely thrilled.

"We already work with many ARMA members. Taking part in this award scheme and winning means we will now be known by many more."



Cleankill celebrates! From left: Paul Bates, Mike Williamson and Chris Davis



Royal Birkdale gets its own Jet

Rufus, the Harris hawk is a familiar sight at Wimbledon, but now the famous Scottish golf course and recent home to The Open, Royal Birkdale, has commissioned the services of Jet and Gin.

Jet is a peregrine falcon and Gin a Harris hawk. Both were taking to the skies early



Luke Summers of NBC Environment with Jet the falcon and the Claret Jug

each morning of The Open to make sure neither pigeon nor seagull made an unwelcome appearance, especially in the food handling and eating areas.

This was something of a dream assignment for golf enthusiast, Luke Summers, an NBC Environment surveyor who was provided with an 'access all areas' pass. Hard life this pest control!

Export excellence award for PelGar

At a black tie awards dinner held on 15 June at the Grange Hotel, Tower Bridge London, PelGar was highly delighted to discover they had won the Export Excellence in Asia Award in the UK Excellence Awards programme.

The selection process involved a written application, interview and presentation on the company of PelGar's business in Asia Pacific. This was undertaken by PelGar's regional manager for Asia Pacific, Gerwyn Jones.

As Gerwyn is based in New Zealand, PelGar managing director, Dr Gareth Capel-Willams attended the awards ceremony with his wife Paola. Somewhat shocked, but delighted, Gareth said: "It is an incredible accomplishment for PelGar and further confirms our position as a significant global player. A fantastic achievement for Gerwyn and the whole PelGar team."



Accepting the award is Dr Gareth Capel-Williams (centre) with his wife, Paola, to his left with the champagne

Good news for rodenticide users

All eight anticoagulant rodenticide active substances have successfully come through the latest EU review.

The decisions on warfarin, chlorophacinone, coumatetralyl, difenacoum, bromadiolone, brodifacoum, difethialone and flocoumafen were published in the *Journal of the European Union* on 26 July 2017 and this time the approval will last for seven years commencing 15 August 2017 (20 days after official publication).

The last time the EU regulators looked at the rodenticide actives they chose to only give them a five year approval. Maybe the authorities are feeling more confident about these products or, perhaps, they are just being more pragmatic and don't want to have to go through the whole review rigmarole in another five years.

It is important to note however that all of these substances still remain candidates for substitution and the regulators did not feel confident enough to grant them the full 10 years of use.

The new approvals now make a clear distinction between general public, professionals and trained professionals and detail the new lower maximum pack sizes that must be brought in for general public products.

The specific timing for products to be introduced based on these renewals will vary depending on when approval holders submit product authorisations to local competent authorities. Overriding this however is the timetable for the toxic to reproduction labelling changes. The deadline for these is 1 March 2018. Effectively this will mean that all general public products (except for those based on difethialone) will have to be taken off the shelves by that date. Going forward, any replacements below the 30ppm concentration will then be in the smaller pack sizes.

As for the extra 'untrained professional' category presumably this has been added to cover those EU countries with no training requirements. Here in the UK stewardship has effectively already introduced the concept of a 'trained professional'. Making a distinction between trained and untrained professionals therefore seems a redundant concept for UK pest professionals.

Rare pale mole caught in Norfolk

Jack Platten who has only been working for the family run pest control business, Platten Pest Control, since 2013, has sent in this photograph of a rare pale coloured mole he caught in Hoveton North Norfolk this July. Is it an albino?

True albino moles are extremely rare. It has been suggested that they occur at a ratio of 1:100,000. Given that the estimated population of moles in the UK is said to be 40 million. At a ratio of 1:100,000 this equates to just 400 albino moles in the UK!

However, albinos are pure white and have pink eyes whereas this mole is more beige with some golden patches so it is most likely a leucistic mole. That's still pretty rare as Devon-base Dave Archer told us back in **Pest 27:** May & June 2013. At that time he had just caught a leucistic mole and it was the first time in his then 33 year mole catching career! Well done Jack you've taken 29 fewer years than Dave to catch such a rare specimen.



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Rodenticide Roger retires

After a career spanning nearly 40 years, the industry bids farewell to Roger Sharples – very well known internationally both for his regulatory expertise and dry sense of humour.

Having acquired a degree in applied biology, Roger began his career as a biologist with Widnes-based Sorex in 1978, before becoming the company's regulatory affairs manager in 1988. With the acquisition of Sorex by BASF in 2008, he took on the role as a senior global regulatory manager for rodenticides.

Over this long journey, Roger made a valuable contribution to the development of several anticoagulant rodenticides, in particular difenacoum and flocoumafen, successfully supporting them through registration and re-registration worldwide.

Always keen to explain the specific regulatory challenges of rodenticides as well as their benefits for public and animal health, Roger helped shape their regulatory framework in

Europe, was a founder member and chairman of the CEFIC Rodenticide Working Group and a member of the Rodenticide Resistance Action Group as well as serving on several British Pest Control Association committees.

In 2012 he was invited to become a member of the *Pest Control News* Hall of Fame. At *Pest* we would also like to record our thanks, as we frequently turned to Roger for guidance on rodenticide regulatory issues.

Roger decided to retire at the end of June 2017. We wish him all the best for the next chapter in his life.





New technical sales manager at Barrettine

Bristol-based distributor, Barrettine Environmental Health, has announced the appointment of a new technical sales manager – Josh Randall. Keeping up the family connections, Josh is managing director, Steve Bailey's nephew, but has learnt the ropes within the organisation as he has been involved in stock control, supply chain and logistics and technical sales.

Over the six years Josh has been with Barrettine, he has become an integral part of the sales team and also gained his RSPH Level 2 certificate in 2014.

And news of another – Roland Higgins

We are sad to report that word has reached the **Pest** office that Roland Higgins, Director General of the European Pest Management Association (CEPA) is to retire at the end of this year

(CEPA) is to retire at the end of this year. Roland took on this position in June 2010, and over the years has made his mark in the industry – both in Europe and elsewhere in the world. Roland's linguistics skills have certainly proved their worth – he speaks five languages (English, Dutch, French, German and Spanish) – a very valuable asset. A more detailed appreciation will follow in the future.

Pete is **PROMPT** local authorities man

Pete Newbrook, the pest control manager for Wirral Council, has joined the BASIS PROMPT committee.

Pete says: "There's no place for poor quality pest control and authorities have a duty to ensure both in-house technicians and sub-contractors are up to the task. By insisting on membership of BASIS PROMPT, councils can rest assured they're employing qualified professionals."



Pete, 59, has been in local authority pest control since joining Wirral Council as a trainee in 1977. He was a district technician for more than 20 years, before becoming deputy manager and finally manager in 2008.

Rats in drains?



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Call to end double standards in spring trap welfare



Higher welfare traps are in all probability more effective than lower welfare alternatives and there is no reason to believe they should cost more ?



Dr Sandra Baker raising welfare concerns

Dr Sandra Baker from the University of Oxford's Wildlife Conservation Research Unit made her case for an end to double standards of welfare in a presentation at the International Conference on Urban Pests.

She pointed out that exemption from regulation for mole traps and break-back traps for rats and mice has encouraged the proliferation of ineffective and inhumane traps. Disappointingly, regulators at neither EU nor national level have shown any interest in amending this anomaly which goes back 60 years to the Pests Act 1954.

An industry-led voluntary scheme

If the UK government won't act then she suggested that the industry should, by introducing its own Voluntary Trap Approval scheme. This would allow manufacturers to put their traps through the existing system for regulated traps. Whilst the cost of this would be borne by manufacturers, they would then benefit from being able to market their traps as 'welfare approved'.

Such a scheme would offer a clear choice for public and professionals alike and, she argued, could well lead to a cascade effect whereby leading suppliers chose to only stock 'welfare approved' products, thus edging out the non-approved alternatives.

Of course, introducing a voluntary system isn't as easy as it sounds. We know that there is already a major problem of cheap, imported break-back traps, manufactured to look identical to quality branded traps, Oxford University's Dr Sandra Baker has called for all moles traps and all break-back traps for rats and mice to be approved before they can be sold in the UK. Highlighting the double standards currently in place whereby all other spring traps must be welfare approved, she argues that research completed by her team makes a strong case for all traps to be tested and welfare approved before being marketed.



The best traps have larger opening angles and 'double-peg' spring mechanisms

coming onto the market. Such a voluntary system of approval would do nothing to tackle this problem. Those involved would simple re-create any approval logos or certification marks.

That is an important point but, surely it would be a step in the right direction to at least know which of the branded traps offer the most humane kill. A voluntary approval system would deliver that. The second step would be to make sure traps are only available from reputable suppliers.

In response to our online article on this topic, pest professional Amy Kelly of Brian Kelly Environmental Services got in touch: "Just a quick note to say that your recent article on break-back traps was fantastic! I couldn't agree more.

"Recently I've found an increase in very weak plastic mouse traps being used in domestic situations where the client has attempted to use traps themselves. I've actually started sticking my finger into the traps to demonstrate to the client how weak they are. It doesn't even sting! I didn't know that cheap knock-offs were entering the market, so now these weak traps make more sense. There is no way such traps are humane and effective, and I welcome any legislation or public education, to help consumers make good choices."



2012 research findings

Five years ago Dr Baker and her team completed a study into the mechanical performance of rat, mouse and mole spring traps (see **Pest 24:** November & December 2012). Impact momentum and clamping force were measured. Relative trap performance was shown to vary significantly. Some break-back traps 'snap' with a force that is up to eight times weaker than others. In some the clamping force was up to 5.5 times weaker. There was considerable overlap between the strongest mouse trap and the weakest rat trap which, as rats are some 20 times heavier, is particularly concerning.

The study also showed no relationship between trap price and the mechanical performance, except for the talpa type of mole trap, where the more expensive traps produced a greater clamping force.

Mole post-mortem study

Since this work was published, the Oxford team has done postmortem studies of moles. This concluded that the primary identifiable cause of death among moles killed in traps was acute haemorrhage and not, as would be preferred from a welfare point of view, a quick kill caused by damage to the skull or upper cervical vertebrae.

Not just break-back traps with welfare issues

Dr Baker was particularly uncomplimentary about the new enclosed mouse traps designed as disposable one-catch options for squeamish members of the public. She condemned the ones which are completely sealed as there is no means of checking whether the animal inside is actually dead.

Some live catch traps also met with disapproval and not just because of the welfare issues associated with what you do with the animal once it has been caught. A tunnel mole trap which was too close fitting, leaky, with no room for bedding and that allowed multiple moles to enter was a case in point as were glueboards, particularly in non-professional hands.

Where next?

Cynics may say that the last thing the industry needs is another voluntary system adding more hassle and expense, but surely this is an opportunity for the industry to take the lead. Yes there will be difficulties BUT is that an excuse for doing nothing?

What we do need from the researchers though is more information on which traps performed well from a welfare point of view, and that's one aspect that, so far, Dr Baker has refused to provide any detail on. All she will confirm is that in testing the best break-back traps from a welfare point of view were those with larger opening angles and 'double-peg' spring mechanisms.

STV applauded for taking action

On a more positive note, Dr Baker reported at least one manufacturer had made changes to their practices in light of the 2012 research findings. She explained that STV International based in Thetford, Norfolk, has altered its approach by:

- Focussing marketing on higher impact momentum traps with double-peg springs;
- Redesigning one of its plastic traps which had previously had a small opening angle and a jaw type spring;
- Implementing minimum standards for the materials and manufacture of wooden traps;
- Introducing quality assurance testing for the resilience of spring strength with repeated use.







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Legal precedent must not be ignored

Karol Pazik is first and foremost a healthcare professional. He is also managing director of WaspBane. With a healthcare background he comes at the wasp problem from a different direction. In this exclusive article for **Pest** he explains how a recent legal ruling has huge implications for pest control professionals.

In 2016 Mohammed Zaman was jailed for the manslaughter by gross negligence of Paul Wilson. Restaurateur Mohammed Zaman had sold a curry containing peanuts to Mr Wilson despite knowing that Mr Wilson had a serious allergy to peanuts. In lay terms, Mohammed Zaman was prepared to risk Mr Wilson's life to sell him a peanut-laced curry which ultimately led to Mr Wilson's death.

One might be forgiven for asking what this tragic episode has to do with pest control. The answer is quite simply that the conviction of Mohammed Zaman has set a legal precedent that the food industry and, by extension, the professional pest control industry cannot ignore.

Wasps represent a risk to human life and their behaviour is predictable. Serve a sweet

food outdoors at the height of the wasp season and it is entirely predictable that it will attract sweet feeding wasps. It is also entirely predictable that, without adequate protection measures, those wasps will sting some people. Using the Zaman case as a legal precedent, it may be argued that any restaurateur serving food outdoors at the height of the wasp season without the necessary wasp control measures in place is willing to risk the life of their patrons to sell them that food! The Zaman case is just one interesting development affecting the market for Integrated Wasp Management (IWM) since **Pest 38** was published in April 2015. (See box opposite for a summary of this article or visit <u>www.pestmagazine.co.uk</u> to read the full version.)

Since then, WaspBane has not been idle. Having failed to illicit a collaborative response from the British Pest Control Association (BPCA), the company embarked, alone, to roll out IWM.



Representations were made to the Chartered Institute of Environmental Health (CIEH) culminating in two articles on IWM in Environmental Health News (EHN, August 2016, pp 16-17 and EHN, July 2017, pp 28-29) as well as attendance at two national CIEH Food Safety conferences.

Raising awareness

WaspBane has been delighted to support the CIEH and will continue to do so to help improve public safety. The company is investing in raising awareness among Environmental Health Officers (EHOs) of the massive health risk posed by wasps and the need for outdoor caterers to engage IWMsavvy pest professionals. WaspBane is even more delighted that it is gaining traction within the environmental health sector and that the health threat from nuisance wasps around outdoor catering is being taken seriously, as are the shortfalls in orthodox wasp control in dealing with nuisance wasps around outdoor food outlets.

Back in 2015 the BPCA chose to dismiss the concerns raised by WaspBane about the health threat from wasps and the potential for increased risk from inappropriate methods of nest eradication. Quoting directly, BPCA stated that they: "Did not believe there was sufficient evidence to suggest the method of wasp nest treatments being carried out increases either the risk or occurrence of wasp stings." BPCA also said that the evidence linking wasp stings and Kounis syndrome: "Did not appear to be sufficiently robust to warrant any significant action." This approach also totally ignores all of the other serious reactions and health complications from wasp stings.

And true to their statement, BPCA has taken no outwardly visible action since 2015 save to use a pretty picture of Polistes wasps in its website banner for July 2017 – wasps which are incidentally rarely if ever found in the UK and certainly not a pest problem!

Evidence amassing

The difficulty that orthodox wasp control now has is that the lie of the land has changed. More evidence about Kounis syndrome is amassing as health care professionals themselves become more aware of the syndrome which is not rare, just poorly diagnosed (ref 1). The British Heart Foundation now includes Kounis syndrome and the link to wasp stings on its website (ref 2). In a study conducted in China over a period of eight years, evidence has come to light of an excess of heart attacks in men during the wasp season, especially in August (ref 3). According to Abdelghany et al (ref 4), wasp stings represented 8% of the Kounis admissions reviewed. This is likely to be the tip of the iceberg, as this work only looked at diagnosed cases. The difficulty for the medical professions is that mis-diagnosed

What is Integrated Wasp Management?

The vast majority of people stung by wasps in the summer are stung when they are around food. Comparatively few are stung around nests so, although treating a wasps' nest may be appropriate if it represents a direct threat, it is only part of the story. Integrated Wasp Management (IWM) is about targeted risk reduction focusing on prevention as well as control. It requires a thorough understanding of wasp behaviour and risk so that, following detailed assessment, effective strategies can be implemented via the expertise of the pest professional, participation of the client and correct use of control tools – the IWM triangle. The IWM-savvy pest controller will understand why wasps are attracted to a site and why wasps behave the way that they do in relation to that site.

IWM is about understanding:

- Food pathways and advising clients on how to manage them and how to anticipate and exploit wasp behaviour within those pathways so as to effectively remove wasps from those environments;
- Wasp proofing, including the correct selection of furniture and waste receptacles and their management;
- How something as simple as prevailing wind direction can make all the difference.
- When nest eradication will help and when it will make things worse;
- IWM is about knowing when and how to deploy effective static interception trapping and when and how to use effective dynamic interruption trapping.

Above all IWM is about understanding that:

No single solution is effective and that successful wasp management can only be achieved through the integration of a diverse range of measures. but especially 'silent' Kounis cardiac events, as a consequence of direct non antibody degranulation of mast cells by wasp venom, without the outward signs of allergic reaction are almost impossible to diagnose.

The 2015 discussion summarised

In **Pest 38**, Karol Pazik argued that proactive nest eradication carried out in the wrong way during the hunting phase of the wasp life cycle has the perverse effect of increasing risk by prematurely creating sweet feeding nuisance wasps. During the hunting phase, wasps obtain their food by trophallaxis from grubs within the nest who secrete sugar from digested insect skeletons.

Nest treatments that do not kill all of the resident wasps and prevent workers from returning deny wasps their food source from within the nest and encourage them to find sweet foods elsewhere.

As the vast majority of people are stung by wasps around food, it is easy to see how inappropriate pro-active nest eradication, where nests are not an immediate threat to human health, can actually make things worse and increase risk in the wider environment.

He added that there was mounting evidence that wasp sting induced (Kounis syndrome) 'silent' heart attack deaths could be as high as 1,000 a year and so reasoned that inappropriate wasp treatments could actually represent a more significant risk to public health than otherwise appreciated.

He advocated the use of IWM which reduces risk around outdoor food areas by more than 90% compared to orthodox wasp control.

The BPCA response

In its response the British Pest Control Association (BPCA) explained that its 20 strong Servicing Committee had listened to the arguments presented by Karol Pazik but that together with the BPCA Board they did not believe there was, at that time, sufficient published and peer reviewed evidence to change the industry's position on wasp control.



Raised awareness of the risk from wasps in the environmental health world will mean that orthodox wasp control will have to prove that it is capable of dealing with nuisance wasps outdoors around food. I believe the BPCA must also now step up to the plate. The one thing that the Zaman case teaches is that it is not a defence to trivialise identified risk and wilfully take no 'significant action' in response to that risk.

The IWM market is primarily, but not exclusively focused on the 'commercial' sector, typically food producers and the catering and leisure industries. Given that these sectors interface and interact very heavily with the public, they carry huge duty of care obligations.

An objective assessment of comparative risk between orthodox wasp control and IWM demonstrates that orthodox wasp control simply has no place in these environments.

Wasps are most dangerous in the defence of their nests which is where orthodox wasp control focuses its activities. A significant proportion of pest controllers get stung around nest eradication. If those nests are not a direct immediate threat to human health, then orthodox wasp control simply exposes pest professionals to unnecessary risk without changing the risk profile for members of the public interacting with these sectors.

Conversely IWM focuses on the direct risk that wasps pose to members of the public, employees and pest controllers i.e. the nuisance wasps that congregate around food sources. The overwhelming majority of people are stung by wasps in these environments because of the way wasps behave around food. When IWM is correctly implemented sting rates consistently fall by over 90% compared to orthodox wasp control in the same environments.

Protecting pest controllers

Interestingly, and without wishing to tempt fate, not a single pest controller has been stung in implementing IWM. It is not surprising therefore that WaspBane is not only raising awareness about the health risks relating to nuisance wasps but is also briefing EHOs against the dangers of ineffective orthodox wasp control.

To be clear, WaspBane is absolutely

committed to supporting pest controllers working in a sector which potentially is a minefield for the uninitiated. That commitment is exemplified through the company's ongoing free of charge training programme.

The success that WaspBane is having in raising awareness with EHOs is great news for those pest professionals who have invested time and effort in up-skilling and training in IWM. In this respect WaspBane is delighted to be creating new revenue streams for professional pest controllers. The future for IWM as a pest control service is bright and exciting and it is one that progressively more pest professionals are embracing.

BPCA's current position

In the interests of balance we asked BPCA if there had been any change in the Association's position on wasp management. Phil Halpin, BPCA Vice President and Servicing Committee Chair, explained: "BPCA's wasp guidance was last updated (via the Servicing Committee) in July 2015. Unfortunately, we have not yet been in receipt of any interest from our colleagues at WaspBane to explore an independent peer review activity."

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Asian hornet threat confirmed by researchers

New research by the Universities of Warwick and Newcastle, working with the National Bee Unit predicts that the Asian hornet could rapidly colonise the UK, a view shared by Bayer's Richard Moseley, see page 38 in this issue.

Professor Matt Keeling, from Warwick's Zeeman Institute for Systems Biology & Infectious Disease Epidemiology Research (SBIDER), warns that there could be hundreds of thousands of them in just over two decades – putting a critical strain on British populations of honey bees and other beneficial insects.

The researchers simulated the likely spread of Asian hornet across the UK over a 25 year period, starting from a single active nest in a location near Tetbury, Gloucestershire – where the first verified nest in the UK was discovered and destroyed in 2016.

Fellow author Dr Giles Budge, from Fera Science and Newcastle University, commented: "Our work highlights the importance of early detection for the successful eradication of this hornet. To do this, we need members of the public and beekeepers to familiarise themselves with this hornet. Rapid reporting could make all the difference between eradication and widespread establishment."



Asian hornets hawking a honey bee hive

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Still positive after all these years

What a resilient lot professional pest controllers have turned out to be. In what is the seventh year of the National UK Pest Management Survey pest professionals have, once again, clearly stated their belief that the prospects for UK pest control are very bright.

The 2017 online survey of **Pest** readers at the sharp-end of pest management took place in March 2017. There was an impressive 10% response rate. Even allowing for the likelihood that those who are not doing so well might choose not to participate, the optimism and 'go-for-it' attitude we have measured is overwhelming.

Approaching 80% of respondents (78% to be precise) predicted that prospects for the coming year were either good (48%) or very good (30%). Over the medium (five-year) term, three-quarters (75%) said prospects were either good (44%) or very good (31%). Indeed the 2017 survey recorded the highest percentage ever of respondents predicting that prospects over both the immediate and medium term were 'very good'.

Changes for the better

For those working in the private sector, either for companies (as technicians, biologists, managers, directors or owners) or as self-employed pest controllers, this optimism is reflected in actual business performance. We ask these groups to tell us about the state of their business in the previous year.

The results from the 2017 survey had the largest number yet reporting that profits were up – 59%; a significant 7 percentage points higher than in the previous year, which was, itself, a record high for the survey. Even more encouraging just 4% recorded a decline in profitability compared to 10% in the 2016 survey. The figures from the first year of the survey, back in 2011, were just 25% reporting an increase in profits and 18% saying profits were



down. How things have changed and for the better!

So what's keeping pest professionals busy?

When it comes to activities, comparing results from 2012 with 2017 there are few, if any, changes. The bread and butter pests have been, and still are, rats and mice.

Rodent control accounted for half of all pest control activity in the UK, according to the 2017 survey. In the 2011 survey it made up 48%, so, very little difference. The next biggest pest control activity in 2017 was, at 13%, wasp control. In 2011 wasp work made up 16% of all pest management activity so, on the face of it, there has been a decline in wasp control work.

But, as we know, wasp work is very weather dependent so, fluctuations in activity levels can be expected. Unfortunately, due to a change in the way figures were collected, the overall impact of what was a catastrophic wasp year for pest controllers – the summer of 2012 – was not recorded in the same way.

What was recorded, however, was that 83% of survey respondents experienced a decline in wasp work in the summer of 2012. It seems likely therefore that, during that year, wasp work would not have made up anywhere near 16% of pest control activity. By the summer of 2014 (the next time comparative figures were recorded) wasp work was measured at 14% of all pest control work so maybe the summer of 2011 (reported on in the 2012 survey) just happened to be very good year for this seasonal and weather dependent pest.



The National UK Pest Management Survey 2017



Despite all the hype about bed bugs, over the past seven years this pest has only ever accounted for around 4% or 5% of all activity. Similarly, both cockroach control, at 3%, and ant work, at 4%, do not vary much from year to year. Across the board, insect control has consistently accounted for around a third of all control activity.

One area which does seem to be on the increase is bird management. Bird management has generally been at around 6% but, in the 2017 survey, that rose by 50% and now makes up 9% of all pest management activity, according to survey respondents.

Market size

Figures on the size of the UK pest management market are notoriously difficult to come by and the National UK Pest Management Survey is not designed to measure the actual size or value of the market. However, since the 2013 survey we have asked pest professionals to record which pest control activities increased, which decreased and which stayed the same compared to the previous year. This means we can provide an indication of which sectors of the market are expanding and which might be contracting.

Consistently, pest professionals have reported that the volume of







rodent control work they are doing is increasing. On average across all six years almost half (48%) of pest professionals reported rat control work had increased and just 10% recorded a decrease. The figures for mice were 40% reporting an increase and 10% a decrease. Even if these increases were only small, it seems fair to say that the volume of rodent control work now being undertaken must be at a higher level today than it was in 2012. However, as we have seen, rodent control activity has remained at around 50% of all pest management work suggesting that other types of pest management activity must also have increased.

This is borne out by the data which show more pest controllers reporting increases than decreases in all types of pest management work, with the exception of wasp, ant and cockroach control. For ants and cockroaches a net decrease in activity has been recorded in most years. This suggests that these two pests are not as problematic as they used to be, so it is reasonable to assume that the control tools we have to combat them are working well.



Wasps, as previously mentioned, are very weather dependent and this too is reflected in the survey findings with increases and decreases fluctuating from year to year.

In the early years of the survey the majority of pest professionals (approaching 70% in 2012) were reporting increases in bed bua work. However, in recent years, the numbers reporting that bed bug work had increased over the previous year has fallen. It is fair to say, however, that the volume of bed bug work today must be higher than it was when the survey began.



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Self employed pest controllers

Over the six years of the survey, self-employed pest professionals have reported a generally improving picture in terms of profitability and for the past three years have been extremely positive about the future.

A third of our sample (79) in the 2017 survey were self-employed pest controllers. Almost a third of this group work in London and/or the South East, with just over a fifth in the South West and the remainder scattered across the rest of the country.

Over the years this group has seen a steady improvement in profitability. In the 2017 survey more than half (53%) told us that profits were up and just 6% reported profits as down. Back in 2011 only 17% said profits had risen and 29% reported a fall in profitability.

On average 45% of activity is in rodent control – in particular rats, which take up just over a quarter (26%) of a self employed pest controller's time. The next biggest activity is wasp work (18%) followed by other mammals, an area of work which now makes up 16% of activity compared to just 8% back in 2011.

Half of all activity is conducted in domestic homes and almost a fifth (19%) is now on farms, with the remaining 31% for commercial clients. Whilst the work on farms is significantly higher than it was in 2011 (15%) it has been higher, reaching 29% in 2013. No clear pattern emerges, so whilst it would be good to be able to say that farmers are waking up to the need for professional pest control that idea is not backed up by our data.

As the graph shows, for the past three years this group has been very optimistic about its prospects over the coming year. If anything prospects for the next five years have been viewed even more positively, with 80% now saying prospects are 'good' or 'very good'.

Threats and concerns

The top two threats to rodent control identified by self-employed pest professionals have consistently been 'DIY control' and 'financial pressure on households/businesses'. Concern about 'poor professional pest control practitioners' has made the top three on two occasions in 2013 and 2016. Whilst in 2014, 2015 and, again, in the 2017 survey, increasing restrictions on how products can be used is listed as an important threat to rodent control. The latter must surely be to do with the perceived impacts of rodenticide stewardship.

When it comes to insect control the main threats are much the same as for rodent control, namely 'DIY control' and 'financial pressure on households/businesses' Over the past two years, however 'declining insecticide range' has been identified as the third biggest threat to insect control replacing 'poor professional practitioners'.





What you said...

In the 2017 survey participants had the opportunity to add comments about other concerns.

For rodents, the need for a much bigger focus on proofing and hygiene and the lack of coordination between public and private pest controllers were identified. There were concerns expressed too about the way in which rodenticide stewardship will be applied, particularly by the 'larger' companies who, some self-employed pest controllers felt, 'are too quick to go down the poison route.'

There was also specific criticism about how the bigger companies track their employees and time visits, thereby encouraging shortcuts. It was felt pest controllers following the true spirit of the stewardship guidelines would be put at a disadvantage as they would need to charge more for more frequent visits.

Some also called for more research into mechanical controls and others highlighted the need for better client education.

Of a more general nature form filling and increased paperwork were identified as 'a pain in the neck' and, not for the first time, several people wanted to stop rodenticides being sold to Joe or Joanne Public.



The National UK Pest Management Survey 2017

The National UK Pest Management Survey 2017

Local authorities

Local authority pest control units have had it tough over the past six years and today they make up a much smaller proportion of survey respondents than in 2011. Those that are left are now feeling more optimistic about their future, although a third still view prospects as uncertain.

The proportion of local authorities taking part in the National UK Pest Management Survey has declined steadily over the years; a reflection of what has happened to local authority pest control units during that time. In 2011, 35% came from the public sector. In the 2017 survey just 23% (57) came from local authorities. These were equally split between pest technicians and directors/managers.

Further evidence of how the public sector has shrunk is seen in the change in the size of local authority teams. In 2011, 54% were in teams of five or fewer and a third (33%) had between five and ten individuals in their team. By 2017, 72% were in teams of five or fewer and just 14% had between five and ten people in their team.

Because this survey is conducted among **Pest** readers, i.e. among people who are involved in professional pest management, it should come as no surprise that 72% of local authority respondents still work for councils which conduct all their pest control services through an in-house team. In 2011 this stood at 82% so it has fallen. Around 7% of our sample sub-contract the whole service to the private sector and 4% offer no service at all. In the recent British Pest Control Association survey of all local authorities around 20% offered no service at all. (See **Pest 51**: June & July 2017.)

The way local authorities charge householders has also changed. From 2011 to 2014 between 44% and 48% of the councils in our survey offered a free service for 'all, or some pests/groups of people'. In the 2017 survey this had fallen to just 29%.

The core service offered by local authorities has always been rodent control. In 2017, 39% of local authority activity was combating rats, with a further 23% tackling mice. In 2011 the figures were 38% rats and 21% mice, so very little difference. Wasps too continue to be important at 16% in 2017 and 19% in 2011. Throughout, local authorities have been more likely than any other group to report decreases in a particular pest control activity. Local authority pest control takes place primarily in the domestic sector (74% of all activity in this year's survey).

Future prospects

Local authorities have had it tough in recent years, nevertheless this group has been surprisingly resilient when looking to the future. Prospects for the year ahead however, have always been viewed more positively than those over the longer, five-year period. The low point for immediate prospects was reached in the 2013 and 2014 surveys with just 40% or so assessing prospects as 'good' or 'very good'.

The results from this group in the 2017 survey are the most positive yet, with 63% seeing prospects as 'good/very good' for the coming year and just over a half with the same assessment for the medium term. However, there is still a good deal of uncertainty with well over a third in the 'don't know' or 'poor/very poor' camp over that medium term period. Compared to their counterparts in the private sector (self-employed and companies) they remain much more cautious about future prospects.



However, perhaps a corner has been turned because, for the first time in the 2017 survey, local authority people did not select 'local authority cutbacks' as the biggest threat to rodent control. Indeed this category slumped from 75% to 51%. The top barrier to rodent control for local authority pest control was identified as 'financial pressure on households/businesses'. This was followed by 'local authority cutbacks' with 'DIY control' in third place. The threats from 'rodenticide and behavioural resistance' are also thought to be rising, whilst concerns about 'product use restrictions' have tailed off.

For insect control concerns about 'DIY control' have leapt up the rankings along with fears about 'increasing insecticide resistance', but worries about 'local authority cutbacks' and 'declining insecticide range' have both tailed off.

What you said...

In the 2017 survey participants had the opportunity to add comments about other concerns. Among the barriers to rodent control were the refusal of householders to take ownership of a problem and a lack of willingness to work cooperatively with neighbours to solve a problem. Also highlighted were the general public using rodenticides, the incorrect use of snap traps and glue boards and the dangers of the Internet where customers look online for information on how to deal with a pest – a little knowledge is a dangerous thing!

The need for education and the importance of hygiene and housekeeping were also mentioned. One of the biggest concerns is that because of cutbacks in free public health pest control services there will be few, if any, rodent treatments in poor areas. The fear is that this will store up problems for the future.

Others are worried about the use of single feed rodenticides outdoors, especially by amateurs, seeing this as a retrograde step and wondering: "Why, if you can't buy prescription pills over the counter, can you still buy rodenticides?"



Companies

Those working for companies as owners, directors, managers, field biologists and technicians have consistently been the most positive about the future.

Pest professionals working in private sector companies made up 45% (111) of the sample in 2017. Of these around a third are pest technicians or field biologists, with two thirds being owners, directors or managers. Over a quarter (28%) are based in greater London and the South East, with the rest spread around the UK.

Around 75% of these businesses have been established for more than 10 years and almost a fifth (20%) work in teams of more than 20. However, over half are in small businesses, in teams of five or fewer. Essentially this picture has remained constant over the years.

In the 2017 survey 63% reported profitability had improved and a mere 3% that it had fallen. Back in 2011 only 31% reported that profits were up although at that time, the majority (57%) said that whilst business could have been better, given the state of the economy, they were satisfied with their results.

More rodent work

In terms of activity private sector companies are doing more rodent control business now than they were in 2011 and it represents a higher proportion of their total business at 52%; equally split between rats and mice. Bed bug work as a percentage of total workload appears to have peaked at around 7% in the period 2011 to 2014. It now makes up just 4% of total activity. For the reasons already outlined on page15 this does not mean that the amount of bed bug work has fallen, just that it represents a smaller proportion of total workload. In every year more pest professionals in this group have reported an increase in bed bug work than reported a decrease and in the early years the numbers reporting an increase were high – 74% in the 2012 survey and 53% in 2013. In 2017, 32% reported an increase and 16% a decrease, with most saying the volume of bed bug work had stayed the same.

Wasp work has also fallen as a percentage of total workload but bird management is an area where there has been growth. Bird work has generally made up around 9% or 10% of activity but in 2017 it jumped to 13%.

As might be expected companies do most of their work (between 60 and 70%) in commercial environments. Over the seven years of the survey there has been a steady increase in the amount of work done on farms rising from 5% in 2011 to 10% in this year's study.

This group has consistently been the most optimistic about prospects for the coming year and over the medium (five-year) term. For the first four years, 75% viewed prospects as 'good' or 'very good' but in the past three years that has increased and now stands at 85% for the next 12 months and 84% over the medium (five- year) term.

Back in 2012, the biggest threats to rodent control were listed as 'financial pressures on customers' and 'DIY controls'. Both of these fell steadily until 2015, when concerns about 'financial pressures'



started to rise once again. In the 2017 survey 'DIY control' has also moved up the rankings. The logic is clear. As finances become tighter more householders are likely to turn to DIY solutions. From 2014 onwards the biggest threat, according to this group, has been from 'increasing restrictions on how products can be used'.

For insect control, 'financial pressure on customers' has always been recorded as the biggest barrier. 'DIY controls' are less of a concern now than they were in the early years. This group, more than any, has always identified 'poor professional practice' as a major threat to insect control. In the past two years 'declining insecticide range' has also come up the rankings.

What you said ...

In the 2017 survey participants had the opportunity to add comments about other concerns. Key among these were the reluctance of customers to get involved with Integrated Pest Management, the problems associated with supermarket specifications and auditors with too much power. Some also identified 'profit before service' as a major barrier.

More controversial is the view that the move towards one-day courses intended to comply with rodenticide stewardship is leading to lower professional standards. Concerns were expressed too about invasive species and the potential loss of 'natural' repellents and insecticides due to EU Biocides Regulation.

One respondent summed the situation up as follows: "Ah the usual. Clients who want no pests, but with no pesticides, auditors who only consider paperwork, rather than successful pest control, accountants who see costs, but not servicing standards and go for the cheapest, regardless and trade association members with terrible standards but no redress or expulsions!"







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Help for neglected tropical diseases



The 2017 ISNTD Bites conference was held on 19 July at the Institute of Child Health in London. This event is organised annually by the International Society for Neglected Tropical Diseases and aimed at vector control professionals and specialists in both the research and commercial sectors.

With the theme being new collaborative frontiers in vector control and global health, a series of new developments was covered by the speakers.

First to speak was Prof Gabriella Gibson from the Natural Resources Institute, University of Greenwich. She outlined their work developing a 'human decoy' trap that exploits the very blood-seeking behaviour of mosquitoes, notably their sensitive night vision, their olfactory ability and landing response on a dark, warm body.

It is this that makes them such good carriers of the various neglected tropical diseases and malaria. This pioneering trap is the subject of a new Medical Research Council (MRC) grant.

New malaria net

Dr Julian Entwistle, independent consultant working with the Innovative Vector Control Consortium (IVCC), described the IVCC pipeline of vector control products being developed in partnership with industry, including nine USAID Zika Grand Challenge projects.

The most recent of the products to be announced is Interceptor G2 from BASF, a mosquito bed net with the insecticide chlorfenapyr, the first new class of public health insecticide for malaria prevention to be introduced in more than 30 years.

Working with IVCC and the London School of Hygiene & Tropical Medicine (LSHTM) for more than 10 years, BASF has successfully repurposed chlorfenapyr to be effective in combination with a pyrethroid on mosquito nets and meet the stringent World Health Organisation (WHO) performance standards.

Dr Anna Drexler of the Department of Neglected Tropical Diseases in WHO detailed the revised draft of the Global vector control response 2017-2030 which is shortly to be finalised following the fast-tracked consultative process that commenced in June 2016. Amongst its very ambitious targets is one of prevention of all epidemic vector borne disease by 2030. Adoption of novel vector control tools is strongly supported by this strategy and WHO has set up a process to review novel technologies. She commented that vector borne disease currently accounts for around 17% of the estimated global burden of communicable diseases.

Far from overlooked, Dr James Logan from the LSHTM led the workshop on Zika. He commented that Zika has been found in 86



black and white stripes

countries with infection rates in parts of Brazil as high as 3%.

Prof Hannah Cooper, Director of the International Centre for Evidence in Disability, a research group at LSHTM, explained that microcephaly is only one of the symptoms of children born to mothers that contracted Zika during pregnancy and that there are likely to be tens of thousands of children affected with a variety of neurological and physical symptoms.

In a novel approach to the control of schistosomiasis, also known as bilharzia, Theresa Maier from Cambridge University, but working on behalf of the Merck Global Health Institute, detailed her planned gene editing work. The project will use gene editing to transform snails, which are the intermediate hosts, so they are no longer capable of sustaining the parasite, thereby preventing them from completing their life cycle and infecting humans.



Theresa Maier outlined her gene editing work





Global urban pest experts Great science from the formal presentations...



Dr Matt Bertone from the USA



Laura Critina Multini

from Brazil



Dr Partho Dhang, based in the Philippines



From the UK our own,



Clive Boase







There is no other event in the world that can match the International Conference on Urban Pests (ICUP) for its strength and depth of urban pest management expertise. Held every three years, the 2017 event came to Birmingham, UK from 9 to 12 July.

The 250 delegates and speakers were from as far away as Australia, Brazil, China, Colombia, India, Iran, Japan, Thailand, Saudi Arabia, Singapore, the Philippines and the USA, as well as many European countries. The UK was well represented with the British numbers swelled on day two when a special one-day workshop for practical pest managers was held alongside the main event.

Insects, and how to combat the threat they pose dominated the programme. The opening session, introduced by Dr Matt Davies, chair of the ICUP 2017 organising committee, included global issues such as climate change and the unintended consequences of regulation, as well as more local topics such as how the UK is detecting and dealing with invasive mosquito species.

Rodents and other vertebrate pests were not forgotten with nine sessions devoted to these, rather more than at previous ICUP conferences but, not enough according to some delegates, who felt that four-footed pests were under represented.

Rokill's Brian Duffin was a first-time delegate: "I really had no idea what to expect. The facilities at Aston University were fantastic, as was the food, but it was being able to discuss pest control methods and theory with the experts in their field that I enjoyed most. It was enlightening to speak with people from all over the globe and uplifting to find that they were as enthusiastic as I was. It was certainly an experience I would recommend to others in a technical role."

The one-day workshop drew a reasonable crowd, but it was a shame that more companies didn't take the opportunity to meet this global group of experts. Danny

Lyons and his brother came all the way from Elgin in Scotland: "We were worried we would be rather out of place in amongst the industry leaders. In reality the people were great. Our networking has now reached Holland; aiding a situation my father in law's friend is having with black rats."

Chris Davies from Cleankill was also a workshop delegate: "The talks were kept short, which kept up a good momentum of



Organising committee chair, Dr Matt Davies had a novel way of making sure everyone heard the call to resume sessions after coffee breaks etc – a football rattle!



Danny Lyons came to the one-day workshop and learned a lot from meeting experts like Dr Sara Burt











Plenty of opportunity for networking



Tom Holmes of Pelsis with GEA's Tommaso Broglia from Italy



Rokill's Brian Duffin with Imogen Levensen of Tufnell Park Pest Control

rith Imogen Irk Pest Control Induct the day. Highlights for me included

From Italy, Marco Pellizzari, left, with

the UK's David Loughlin



Bill Robinson, ICUP executive committee member, left, with Dawn Bolton, Agrisense and Gerald Danao from the Abu Dhabi municipality



Rentokil were well represented. Pictured are: Savvas Othon, Matt Green and Mike Wood

changing topics throughout the day. Highlights for me included John Simmons of Acheta talking about widespread behavioural avoidance of baits and traps by a proportion of the mouse population and also the US perspective on bed bugs as they seem to have problems on a scale that is far worse than in the UK."

Whilst the scientific presentations provide the focus of ICUP events, the discussions over coffee and lunch prove equally important with a global exchange of opinions and friendships struck. From an organisational point of view this was a generally excellent event. OK, the directional signing to the various rooms could have been better and the casual format rather than a 'sit down' conference dinner, wasn't to everyone's taste.

The event was brought to a close by Dr Bill Robinson who, jointly with Clive Boase, has masterminded these events since their inception in 1993. Bill announced that the tenth ICUP will be held in Spain at a similar time of the year in 2020.

It wasn't long after ICUP delegates arrived at the Birmingham



Botanic gardens that 'pests' were found. Left, Dr Reiner Pospischil shows off one of the Australian cockroaches happily living in the gardens. Below, this wood mouse was clearly not afraid of visitors to its botanic garden home







Brandenburg's Matthew Kaye gets the drinks in



BPCA's Dee Ward-Thompson and Kevin Higgins tuck into fish & chips



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Revenge by bed bug

A very disgruntled resident from Augusta, Georgia, USA slammed down a cup full of around 100 live bed bugs on the counter of the benefits agency with whom he was in dispute. To everyone's horror, the bugs scampered for freedom, with one even landing on an employee. The entire office was closed and the police called, as was their pest control contractor.

Bed bugs invade UK Parliament

As we know, bed bugs have no respect for status or class and are just as likely to infest a five-star hotel as they are a youth hostel.

Their latest conquest, according to a statement on Parliament's intranet system on 20 July is the Palace of Westminster where "they have been spotted at multiple sites as well as at neighbouring Millbank offices."

This is the first time bed bugs have been found on the Parliamentary Estate. The statement came just a few days before the release of the 2016/17 report on pest control on the Estate. This records sightings of mice and moths as well as costs of pest control activity for the

12 months to 30 June 2017.

The 2016/17 report revealed that the total cost of pest management had risen by almost \pounds 30,000 (29%) to \pounds 132,619. The report suggests the increase in costs is due to a higher number of maintenance projects across the Estate which have disturbed pests and made them more visible.

Bed bug bible brewing

At the International Conference on Urban Pests (ICUP) held in Birmingham between 9-12 July (see pages 22 & 23) Stephen Doggett took to the stage and detailed the content of the forthcoming book on bed bugs, he and many others, have been working on for at least a couple of years – Advances in the Biology and Management of Modern Bed Bugs (ABMMBB).

ABMMBB is a complete synthesis of bed bug information from the past to the present and has more than 60 contributors. These include many of the most recognisable names in the field of bed bugs today – several of whom have appeared over the years within the pages of **Pest** magazine.

JR SP

Uniquely the three main authors were altogether at ICUP. Left to

right: Prof Chow-Yang Lee, Prof Dini Miller and Stephen Doggett

There are seven main sections, 45 chapters, a forward (kindly provided by Dr Harold Harlan), an introduction by the editors, and a conclusion that examines the future of bed bugs and research priorities.

This bible is to be published by Wiley-Blackwell and due for release in early 2018.

Biopesticide to the rescue

Researchers at Penn State University, USA are busy developing a naturally derived, fungalbased pesticide that uses the bed bugs' own natural tendencies to eliminate them.

The result is the development of Aprehend, a patent-pending compound based on *Beauveria bassiana*, a natural fungus that causes disease in insects. The fungal spores stick to the legs of



bed bugs much like wet feet in sand, taking the spores back to their colonies, where the bugs spread the spores around through their natural grooming habits. Within 20 hours of exposure, the spores germinate and colonise the body, killing the bed bug in four to seven days.

Perhaps the most important finding of the study, according to the researchers, is that bed bug resistance to pyrethroid insecticides does not confer cross-resistance to infection by *B. bassiana*. Aprehend is expected to be on the market and available to professional pest controllers in the USA in autumn 2017. Elsewhere, we wait to hear.

Perfect timing!

For the last six years Orkin, one of the leading US pest control companies, has published a list of the 20 most bed bug infested cities in the USA.

Moving up nine places to the number one spot this time is Baltimore. The venue, no less, of this year's PestWorld extravaganza! So, if attending, come prepared to check your hotel

rooms – or maybe someone has told Baltimore of the event's arrival.

PestWorld will be held 24-28 October 2017.



www.pestmagazine.co.uk



Accompanying bed bug module

To accompany the Essential Pest Awareness online training from Acheta, as detailed in **Pest 51**: June & July 2017, comes a further module covering bed bugs. Bed Bug Awareness is aimed at the eyes and ears of a hotel, the housekeeping and maintenance teams.

As with the other courses, the bed bug module can be branded with a company's own logo, and delivered via a self-managed portal.



All go for time saving tank mix of Biopren and Ficam

In heavily infested bed bug premises the use of an insect growth regulator, such as S-methoprene (Biopren 6 EC) with a residual, such as bendiocarb (Ficam W), has become standard practice. The problem was the two products had to be applied individually.

However, the two manufacturers (Bábolna Bio and Bayer Environmental Science) have now come together to underwrite the





application of these two products together as a sprayable tank mix. Details will be appearing on product labels where local approvals permit. This does include the UK.

To support sales of Biopren 6 EC Bábolna Bio has also produced this helpful leaflet detailing the use of this product and results that can be achieved along with details of the bed bugs themselves.

A copy can be downloaded from the **Pest** Library.

Thick-skinned bed bugs show tolerance to desiccant dusts



David Lilly in full flow at ICUP in Birmingham this July

First they developed resistance to DDT, then the pyrethroid insecticides, but surely bed bugs cannot beat desiccant dusts? New research from The University of Sydney, Australia suggests that some bed bugs are already more tolerant, taking longer to die.

Speaking at the International Conference on Urban Pests (ICUP) in Birmingham in July, David Lilly from the University of Sydney's Department of Medical Entomology at Westmead Hospital, outlined these latest findings.

He evaluated two leading desiccant dusts available in Australia – CimeXa Insecticide Dust (silica gel) and Bed Bug Killer Powder (diatomaceous earth) against two strains of bed bugs; the highly pyrethroid-resistant Parrmatta strain from Australia and a laboratory strain from Bayer Monheim which has been 'bred in captivity' and is an insecticide-susceptible strain.

At full label rate both products worked against both strains although the silica gel was much faster acting taking three to four days compared to 14 days for the diatomaceous earth (DE). When a half rate of the silica gel was used the time it took the bed bugs to die increased showing a degree of tolerance to the product.

Whilst the exact cause of this difference is as yet unknown, the authors hypothesise that it could be a byproduct of the expression of other resistance mechanisms, or potentially other behavioural adaptations. This is the first study that suggest that mechanisms conferring resistance to pyrethroids may have potential secondary impacts on non-synthetic insecticides, including desiccant dusts.

As David explained, applying the exact label rate of these dusts was very challenging in the lab (let alone in the field) so, applications at less than optimum rates are likely to occur.

Readers may recall that just over 12 months ago David reported on his research into resistance mechanisms in bed bugs (see **Pest 44**: April & May 2016). This comprehensive study using field strains of bed bugs threw new light on the way bed bugs are beating insecticides. Like all insects, bed bugs are covered with an exoskeleton – the cuticle. Scanning electron microscopy revealed that the thicker the cuticle the more likely the insect was to survive exposure to pyrethroid insecticides.

Whilst diatomaceous earth is available in the UK; the silica gel product is not.





Climbing ability of bed bugs explored

Bed bug traps are now an essential element of monitoring, an integral part in the management programme for this pest. But the use of monitors is worthless if the bugs simply climb out of any monitors they encounter. Recent research has revealed the differing climbing abilities of both the common bed bug (*Cimex lectularius*) and the tropical bed bug (*Cimex hemipterus*).

Bed bug traps rely on a smooth inner wall surface to prevent trapped bed bugs from escaping. Such traps with smooth surfaces can also be used as a barrier to prevent bed bugs from reaching the sleeping hosts. However, if the trapped bugs were able to climb up the smooth surfaces and escape, this would seriously compromise monitoring efforts or their use as

Spot the difference



Can you tell the difference? The common bed bug C. lectularius is on the left

Discovered in the laboratory

Examination of the vertical friction force of adults of both species of bed bug revealed a higher vertical friction force in the tropical bed bug (*Cimex hemipterus*) than in the common bed bug (*Cimex lectularius*). Scanning electron microscope micrograph observation on the tibial pad of adult bed bugs of the tropical bed bug showed the presence of a greater number of tenent hairs on the tibial pad than on that of the adult common bed bug. No tibial pad was found on the fourth and fifth instars of both species.

Near the base of the hollow tenent hairs is a glandular epithelium that is better developed in the adult tropical bed bug than in the adult common bed bug.



Scanning electron micrographs showing the tibial pad of the hind-legs of an adult female in C. lectularius (A) and C. hemipterus (B)

barriers. It is known that a build-up of dust and debris can compromise the efficacy of these pitfall traps, so maintenance recommendations are usually included, such as regular cleaning or the addition of talc.

Research findings

Research undertaken at the Universiti Sains Malaysia, Penang has revealed that one of these two troublesome species – the tropical bed bug – is a much better climber than the common bed bug (*Cimex lectularius*).

Its abilities are such that in the trials it managed to escape from all four of the commercial bed bug monitors used. These were: Verifi Bed Bug Detector, ClimbUp Insect Interceptor, BlackOut Bed Bug Detector and SenSci Volcano Bed Bug Detector.

Significant result?

Interesting certainly – but significant in practice – not really. Or should this be tempered with – not really at the moment?

Fortunately to date, the bed bugs that infest domestic and commercial premises in our cooler European climes are the not so good climbers, the common bed bugs. So, in infested properties, any monitor placed will record their presence.

Elsewhere, most pest management professionals in the tropical world are unable to tell the difference between the tropical and the common bed bug due to their close resemblance so, in practice, tropical bed bugs could well go undetected.

The absence of any outbreaks of tropical bed bugs in Europe does question one of the 'accepted' theories that our recent increased outbreaks are due to foreign travel and overseas visitors!

Reference:

D-Y Kim, J Billen, S L Doggett and C Y Lee. 2017. Differences in climbing ability of Cimex lectularius and Cimex hemipterus (Hemiptera: Cimicidae). Journal of Economic Entomology 110: 1179-1186. Also in the **Pest** Library



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Bed bug insecticides Do they do what it says on the tin?

In June the US Environmental Protection Agency (EPA) published its final Product Performance Test guidelines detailing testing methods for bed bug pesticide products. Whilst readers may question the relevance of these to their own practice, there is a good possibility that the EPA guidelines may be adopted by other regulatory authorities.

Stephen Doggett from the Department of Medical Entomology, Westmead Hospital, Sydney, Australia is well-know for his bed bug expertise. He has cast a critical eye over the new guidelines. Here are his views.

The early years of the new millennium saw an unprecedented rise in bed bug numbers around the world, as reported on many occasions in **Pest** magazine. The critical factor for the global bed bug resurgence has been the development of insecticide resistance within the insect and numerous forms of resistance have evolved within the bed bug. As a consequence, treatment failures have been common, especially with the use of the pyrethroids.

Treatment failures

The problem of treatment failures today can often be linked back to the data that was generated to support the registration of an insecticide for bed bug control. The data may come from assays on old bed bug strains that are susceptible to everything on the market (and such data is irrelevant with today's highly resistant strains), or the data may have been obtained

without adequate due scientific process.

In response to the repeated failure of bed bug approved products, the US Environmental Protection Agency (EPA) aimed to tighten the regulations and the data requirements for the registration of bed bug products. To this end, in 2012 they released the Draft Product Performance Test Guidelines OCSPP 810.3900: Laboratory Testing Methods for Bed Bug Pesticide Products (US EPA, 2012). By ensuring that appropriate scientific testing is



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Stephen Doggett applauds the objective but has fundamental concerns about how 'fit for purpose' the new guidelines are

undertaken on bed bug control products, this should give the consumer and the pest manager more confidence. Namely, that the product actually does what it claims to do, i.e. kill bed bugs.

Much criticised

Unfortunately, these draft guidelines were met with much criticism and for good reason. For example, a resistance ratio of 100x with deltamethrin was considered acceptable by the EPA for a resistant strain (a resistance ratio is estimated by comparing mortality between a known susceptible strain and a resistant strain). For one of our strains (the Sydney strain), the resistance ratio we found was 400,000x (and this we consider only a moderately resistant strain!). Thus the ratio was way too low.

However, perhaps the main critique was that the draft guidelines presented a testing algorithm that simply was neither logistically feasible, nor economically practical.

According to the draft guidelines, the process for evaluating a product for up to three months of residual control would have involved treating 300 panels with insecticide and having another 300 untreated panels for the control. If you could have actually found room to store all of these panels, then you would have needed 30,000 bed bugs for the testing. This number is simply not practical with such a slow growing insect. Furthermore, the cost would have been prohibitive to do the work, in my rough calculations, I estimated that one residual trial would have cost in the order of





around £130.000. This is an amount.

Bed bugs for research

OPINION

which, I suspect, would have halted all residual product testing in the US and prevented new (and more efficacious products) coming onto the market.

Five years on and the EPA has now released the final version of the guidelines. Clearly they have taken onboard many of the criticisms and have reduced the testing requirements to a practical and (potentially) more achievable level.

Perfect guidelines?

But are these guidelines perfect and will consumers be able to have confidence in all pesticide products in the future? Read on!

Let's start by briefly reviewing the main sections of the new EPA efficacy guidelines. The document starts out with a series of definitions, which is then followed by an overview of the protocols required for efficacy studies. This includes what bed bugs are to be used, the number of bed bugs required, how mortality is recorded and how results must be documented.

Next comes a description on how resistance is to be measured and reported. Finally, there are sections on specific test procedures, including testing for repellency, residual assays, evaluation of volatile compounds, testing of ovicidal products, direct spray applications and the evaluation of insect growth regulators.

The EPA should be applauded for at least attempting to develop such guidelines. Many argue that efficacy guidelines are needed to protect all consumers from bad insecticides and to prevent companies from making spurious claims of efficacy, especially as resistance is such a big issue.

EPA applauded but...

It is also terrific that the EPA has attempted to provide guidance on how to test certain products, taking into account the biology of the insect, which is so important in insecticide assays (and often ignored).

However, I suspect that the guidelines will still be considered highly controversial on a number of accounts.

Firstly, one of the definitions (no. 3) seems quite strange; 'A product that controls bed bugs demonstrates residual product performance'. Aerosols and fumigants are highly effective at killing bed bugs if the insect is directly contacted with these formulations. Even pyrethroid aerosols will control every bed bug (even resistant strains) if directly treated. Yet pyrethroid aerosols and fumigants have no residual control. So, should all such formulations be banned? I suspect the EPA made a terrible omission with this definition.

Contentious points

However, there are two extremely contentious points in these guidelines. The first is Section C1(vi), Test Organisms. Here the guidelines specifically state what strains of bed bugs should be used. As a control, the guidelines specify the Harlan strain. Fair enough, this is in many laboratories in the US and is widely used as a control strain, being highly susceptible to all insecticides. The guidelines also indicate that one field strain must be used and that '...testing should occur no later than the second labreared generation'. This latter point is a major problem in my opinion. Many field strains take some generations to establish in order to produce enough insects for testing purposes. To undertake even a basic residual and direct spray test according to the guidelines, a minimum of 600 adult bed bugs would be needed (100 for the resistance ratio, 300 for the residual assays and 200 for the direct spray). For most field strains this will simply not be possible with the second generation.

It is known that insecticide resistance does confer a fitness cost to insects such that they do not live as long and produce fewer eggs, than non-resistant strains. This means that there is a tendency for resistance to decline in laboratory strains over time and eventually disappear. Hence, the reason for the EPA requirements.

However, resistance is not lost immediately with bed bugs, it takes years to happen. In the case of our Queensland strain of *Cimex hemipterus*, it has lost no resistance some 12 years on.

Rather than having a mandatory requirement that only second generation bed bugs be tested, a more logical approach would be to ensure that the resistance ratio of the strain used is greater than the minimum requirements. If the strain under investigation meets a minimum level of resistance, then surely the number of generations does not really matter.

On this very point however, comes the second contentious element of the guidelines, namely the determination of the resistance ratio. I do agree that in all



Building up a population of field-collected bed bugs in the laboratory takes a long time



Bed bug special 2017

insecticide trials the resistance ratio should be determined for all strains tested. This then demonstrates just how resistant a particular strain is.

Resistance ratio way too low

Unfortunately, the EPA has continued with the minimum resistance ratio of only 100; such a number would suggest a very low level of resistance.

In the protocol given for the determination of resistance ratio, it is recommended this is undertaken by residual testing on filter paper. Unfortunately, the determination of resistance by residual means is extremely problematic and unreliable. The issue is that insecticides bind to surfaces differentially, resulting in vastly different levels of efficacy when resistant insects are exposed to various treated substrates.

Different types of filter papers are composed of dissimilar components; some are cellulose based, while others are glass based. If filter paper is being recommended, then the type and brand should be recommended to ensure consistency between trials. The alternative is to use a pre-treated product that is known to release insecticides on a constant basis, much as has been done with insecticide mats. Or, better still, to apply the insecticide topically, directly onto the insect. This provides a much more reliable and consistent measure of resistance.

So, will the EPA guidelines help ensure that in the future the pest manager can be more confident that the product they are using will actually kill bed bugs? Maybe...but maybe not.

Bed bugs possess a range of resistance mechanisms including knockdown, metabolic and cuticular mechanisms. Within these there are multiple forms of each type. In the field, any particular bed bug population can have one, or more, of these, with varying combinations and permutations of each.

Furthermore, the presence of some resistance mechanisms can further enhance others, compounding the effects of resistance. Thus efficacy testing undertaken of any one strain in the laboratory, may not reflect what is experienced in the field, as the field strain could be completely different in the resistance mechanisms it possess.

Having said that, it is simply neither practical, nor cost effective, to test multiple bed bug strains in efficacy trials. Moreover to date, not one bed bug strain in the world has had all of its resistance mechanisms identified. We really do not know the pest we are working with!

Resistance is evolving rapidly

Also, resistance appears to be evolving rapidly. In the last couple of years there have been reports of possible resistance to the neonicotinoids and tolerance to the desiccant dusts. Thus the game is changing all too quickly.

Insecticide efficacy is a very complex science. The type of insecticide, whether or not it is encapsulated, the presence of synergists (such as PBO), the solvent used, the formulation type and the surface to which it is applied, all can and do, effect efficacy. This is even ignoring any form of resistance within the target pest.

Just an indication

Personally, I see efficacy testing and product labels as an indication only that the product may work against some strains under some conditions. It does not mean that they will always work. Never rely on any product on its own to completely eliminate every bed bug infestation.

It is critical that non-chemical choices are used first (e.g. vacuum and steam) and insecticides used as a last resort only. Post treatment follow up inspections are always necessary when controlling bed bug infestations. So, we need to question the need for an overly descriptive document, such as the new EPA guidelines, as they may offer very few tangible benefits to the industry and the consumer.

Finally, at present, the EPA guidelines are meant for the US only and solely for just one bed bug species, *Cimex lectularius* (and not *Cimex hemipterus*). However, it is important to be critical about any efficacy guideline that is developed, both to be fair to the producers and to the end users of registered products, in terms of their expectations. If we are not critical, then such a guideline could all too quickly become the *de facto* international guideline.

Comment from US Association

"Overall, NPMA is supportive of these guidelines. In our comments to EPA in 2012, NPMA noted that the association was deeply concerned with the proliferation of conventional and



Accordingly, we applaud EPA's decision to develop the Laboratory Product Performance Testing Methods for Bed Bug Pesticide Products and believe these will help identify the methods for collecting appropriate data to determine insecticide efficacy for bed bugs."

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How many monitors are enough?



Whilst the early detection of bed bugs is important and therefore the use of monitors advised, the costs associated with monitoring, not just the monitors themselves, but the time to check them, can soon mount up. So how many monitors do you need for the effective detection of a bed bug infestation?

Dr Karen Vail

Early detection of a bed bug infestation is key – both in slowing down their spread and also to the cost of the materials required and the time needed to manage any infestation.

The use of monitors to detect an infestation is therefore advisable, yet, even at a few £s each, the cost mounts if a significant number are required, for example within a large, multi-unit housing block. In addition, the manpower resources not only to place them, but also to check them on a routine basis, are substantial.

Conscious of these constraints, Dr Karen Vail from the University of



Tennessee, USA set out to evaluate the minimum number of monitors required, yet still provide effective results, as she detailed at the recent International Conference on Urban Pests in Birmingham.

Three monitors evaluated

To determine the minimum number of passive monitors needed to detect low-level bed bug infestations in this environment, Dr Vail and her team evaluated three monitors placing one, two, or four per apartment.

One sticky monitor, The Bedbug Detection System, and two pitfall monitors, ClimbUp Insect Interceptors BG and BlackOut BedBug Detectors, were evaluated.

Bed bugs were trapped by the ClimbUp Insect Interceptors BG and the BlackOut BedBug Detector in 88% and 79% of apartments, respectively, but only in 39% of the apartments monitored with The Bedbug Detection System.

In the apartments with pitfall traps, there was no significant improvement in detection when placing two or four monitors versus placing just one. However, results did indicate that it is especially important to include a bed placement when only placing a few monitors.

Inspections by non-professionals are ineffective

Dr Vail also described her work where residents themselves were responsible for inspecting and reporting catches within the monitors. Her conclusion was not encouraging saying: "Relying on residents to report bed bug infestations in ineffective. There is still a need for building-wide visual and monitor inspection by a professional."





Bed bug special 2017

Pan-European canine code nears completion

In last year's bed bug special (**Pest 46**: August & September 2016) we featured the work being done by the not-for-profit Bed Bug Foundation who were then putting the finishing touches to their final draft of guidelines for canine scent detection. So, 12 months later, how have things progressed?

With the use of scent detection dogs ever rising, the publication of a final draft, in December 2016, of the Guidelines for use of Scent Detection Dogs in Bed Bug Management, in both English and also German, came at a very appropriate moment.

This document describes the training process, with detailed information on how to avoid many of the training pitfalls. The guidelines are currently in a consultation phase, with a view to incorporating all the feedback and publishing a finalised Version 1 later this year.

We caught up with Dr Richard Naylor, a member of the Bed Bug Foundation Senate, to find out how the canine assessment process was getting on.

"It has been a busy year. We have held meetings in UK, France, Germany, Switzerland and Sweden to meet with teams, discuss the



Certification of scent detection dogs,

handlers and trainers is a key part of the new Code now in its final stages of development

certification process and gauge feedback. The industry operates a little differently in each country, which creates real challenges when it comes to setting up a pan-European certification.

"In Sweden, for example, the scent detection

industry has close ties with the pest control industry, which consists of just two main companies, Anticimex and Nomor. Consequently, the bed bug scent detection industry also falls into two clear camps: those associated with Nomor and those associated with Anticimex. Maintaining impartiality in such a clearly divided industry can be really tricky," explains Richard.

It seems their hard work has paid off. The Bed Bug Foundation already has within its ranks 56 members from the canine scent detection industry across Europe.

The certification process is run by Larry Hansen, based at Frankfurt Airport in Germany. There are currently six assessors across Europe, two of which are in the UK, both coincidentally based in Kent – Invicta K9 and LAPA Canine Search.

So what's involved in the certification process? "The practical test is fairly straight forward," details Larry. "Four tubes of live bed bugs are hidden in different rooms, along with one 'distractor'. The 'distractor' is usually an empty plastic tube or a tube of dead bed bugs. To pass, the team must find three out of four tubes of live bed bugs and must ignore the 'distractor'. So far, 46 teams have taken the test. Of these just 16 passed on the first try and two passed on the second attempt.

"The most common reason for not passing is failure to ignore the 'distractor'. The odours of live and dead bed bugs are very similar, but it is essential that dogs are trained to distinguish the two, as dogs are frequently used to confirm pest control treatment success," concludes Larry.

Issue 52: August & September 2017



Monitors: what's new?

There's always something new in the world of bed bug monitors!

Susan McKnight, the developer of the ClimbUp has switched from using polyethylene to

no-break polypropylene. This is then polished to a high mirror finish which means the bed bugs are retained without the addition of talc. In the UK supplies are in stock at Killgerm.

At PestEx, on display on the Sentomol stand was the 1st Terminus bed bug coaster from Canada (see **Pest 50**: April & May 2017).

In March 2017, US developer BedBug Central, bought back the intellectual property rights of the BlackOut Bed Bug Detector and has made some design amendments to ensure the walls are extremely textured, both on the outside and inside to allow bed bugs to climb up and so increase the chances they commit to the device.

From Sweden, Nattaro Labs is in the process of developing a monitor to go alongside Nattaro Safe, the company's triangular self-adhesive bed bug tape with diatomaceous earth inside - as spotted at Parasitec in November 2016 (see Pest 48: December 2016 & January 2017).

At the recent International Conference on Urban Pests (ICUP) (see pages 22 & 23) Christine Dahlman Jacobsen had a few prototype monitor samples to show. To be known as Nattaro Scout, it is a pitfall trap with a pheromone attractant lure. It can be placed on the floor, by the legs of a bed, under a sofa and/or

in corners of a room. It can also be attached under a bed by means of an adhesive tab.

Infestations win

It gives us great satisfaction in the **Pest** office to report that Prof Dini Miller from Virginia Tech, USA has been awarded the very first US Department of Housing and Urban Development (HUD) Healthy Homes Hero award.

This award is very well deserved. Anyone who has either met Dini, or heard one of her talks, will know how strongly she feels and how much she does in an attempt to improve the conditions of the residents in social housing facing their battle against cockroach and bed bug infestations.



Award winner Professor Dini Miller, right

Bed bugs on social media

Rentokil regularly produces a range of infographics and blogs – under the deBugged banner. These keep popping up in Twitter feeds and the like. Many target the general public although there is also good information within the series for commercial organisations, especially those involved in the food and hospitality sectors. Perhaps unsurprisingly, a good number in the series feature bed bugs.



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Big bed bug debate



In much of the world, data on the scale of bed bug infestations is thin on the ground. With such a global gathering of urban professionals at the International Conference on Urban Pests this July it would have been foolish to miss the chance to get their views.

Around 70 delegates choose to attend the bed bug workshop. They were split into two: those tending towards academia and those with a more practical calling. Some of the key points made were:

- In Norway, Sweden and Switzerland bed bug infestations are rising but in the UK, the feeling was that levels had reached a plateau. In much of Asia infestations were said to be widespread. Only Australia was thought to have got on top of the problem;
- All agreed that there is no silver bullet for control and that a single pesticide treatment is extremely unlikely to solve the problem;
- There were concerns about heat treatment being completely unregulated and open to the cowboys;
- Whilst the science shows bed bugs are resistant to pyrethroids, in practice they do have a role in many countries, particularly as knockdown products, rather than residuals. Academics felt control failures were due to resistance, whereas the practical group felt it was more often due to poor control practices;
- All agreed that a standard way of confirming treatment success is needed. Some sort of monitoring is probably the best approach. However in practice it is not always possible;
- Interestingly, in the USA, checking for bed bugs is now becoming part of the normal household servicing contract.

Read the full report on the **Pest** website.



WWW



OPINION

Bed bug trends



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Uncovering hidden dangers in tall buildings

Paul Bates, managing director of Cleankill Pest Control servicing London and the South East, says the terrible fire in Grenfell Towers has hit home with him and his staff and made them realise some of the things they come across in their routine inspections are accidents waiting to happen. Here Paul explains how pest professionals could help prevent such tragedies.

As we go about our inspections we've now started to collect evidence of things that are really dangerous and we're passing the photographs on to clients along with advice and warnings.

We can't force people to put things right but our evidence could be used in court if the worst happens. Sometimes things are so bad that we can't carry out our work because a cupboard has been jam-packed with things.



A riser cupboard used for storage

Pest controllers are one of the few tradespeople that have to look behind the scenes as part of their work. We look under floors, in basements, in roof spaces and in riser cupboards and any other places that might harbour pests.

The Cleankill team has come across riser cupboards, which are designed to house pipe work and telecommunication cables that go up and down buildings, being used for storing cardboard and wood, cleaning chemicals and even old carpet tiles.

Most shocking are the cases where contractors have made holes in the fireproof partitions that were designed to divide and compartmentalise the floors and restrict the spread of fire up the building.





Tangled wires and debris in riser cupboard

Of course, as well as fire, holes in partitions are potential 'runways' for rodents.

Some of the buildings we service look perfect and nicely decorated, but when you go behind the scenes you discover some shocking things. Corners have been cut that could have serious consequences. Some contractors think they won't be caught, but it's also a case of staff being educated not to use riser cupboards for storage and to think about the consequences of being lazy or untidy.



A hole in a riser cupboard



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Issue 52: August & September 2017



Will Asian hornets be back this autumn?



Bayer's Richard Moseley

What to do if you find Asian hornets

Any sightings must be reported immediately.

The best way to report a sighting is by using the Asian Hornet Watch app. Launched this March both iPhone and android versions are available.

Alternatively you can email <u>alertnonnative@ceh.ac.uk</u>,

or fill in the the online form at www.brc.ac.uk/risc/alert.php?species =asian_hornet

Even professional pest controllers must not attempt to deal with an outbreak until permission has been granted by Defra and The Animal and Plant Health Agency (APHA). The first UK sighting of an Asian hornet nest was confirmed by the Department for Environment Food & Rural Affairs (Defra) in Gloucestershire last September with further activity in the Channel Islands. So there's clearly a chance that the pests could return this autumn. Pest professionals are being urged to be vigilant and report any case immediately but also to remember that they are currently not authorised to treat this invasive species. Richard Moseley, Bayer technical manager reviews the situation.

Asian hornets, *Vespa velutina*, hover outside honeybee colonies and prey on bees picking them off, one by one, as they return to the hive. Captured bees are decapitated, the abdomen removed and the protein filled thorax then fed to the hornets' larvae.

Asian hornets can also act like a barricade to the bee hive, stopping the bees from leaving and so weakening the population that the hornets can potentially enter the hive and attack the bees in it.

Not only does this cause a problem for commercial bee keeping, but it also upsets the ecological pollinating role provided by bees. As Europe has seen a decline in bee numbers in recent years, it is important to protect them from these vicious predators.

Detection

There are a few indicators that can help confirm whether it's a case of Asian hornets:

- Asian hornet nests can be considerably larger than a standard wasp nest;
- The nests are also often very high up in trees, but can also be found in buildings;
- While wasps enter from the bottom of the nest, Asian hornets entry points are around the sides of the nest;



- The Asian hornet is bigger than a wasp, but smaller than a European hornet;
- They have an entirely dark thorax, a dark abdomen with a bright yellow/orange band on the fourth segment and yellow tipped legs.

Lifecycle

The Asian hornet life cycle begins in the spring. As temperatures rise fertile queens begin building small nests in which to lay and protect their eggs.

Unlike European hornets, each nest can contain multiple queens. Whereas a European hornet nest will have just one queen laying up to 50 eggs a day, an Asian hornet nest can have many queens, each laying up to 50 eggs a day. When the nest becomes too big or is disturbed the queens disperse and you then have multiple nests. Worker hornets live for up to 55 days and, in one season, a colony will produce on average 6,000 individuals.

Between August and October, the fertilised queens will leave their nests to find secluded places to over-winter ready to create new populations the following spring.

One of the main concerns when the nest was found in the UK last September was that fertilised queens might have already left the nest before it was destroyed and be overwintering without anybody noticing them.

Treatment

When the sighting last year in Tetbury, Gloucestershire was confirmed and the nest site discovered, the APHA and Defra approached Bayer for guidance on an appropriate insecticide to effectively treat Asian hornets in the nest. Ficam D, was the product selected and APHA liaised with Bayer on several occasions when planning the treatment to ensure that this was the most



suitable product for the target species. The dust formula is ordinarily used to treat wasps and ants, as well as a wide range of other crawling and flying insects. It is designed to penetrate voids and spread within nests, being transferred around the nest by the insects, without irritation, making them less aggressive to the applicator.

The future

Asian hornets are currently a reportable pest, but there are concerns in the industry that last year's outbreak was simply the 'tip



At first the nests were always found high up in tree tops...



... but now they are found inside attics, garages and other buildings



Treating a nest with bendiocarb



One less nest to worry about!

of the iceberg'. There is a chance that we could see these hornets becoming as widespread in the UK as they are already in France.

It is not hard for the insects to enter the UK from Europe. Asian hornets could potentially fly, or be blown, over the English Channel, or they come across with tourists, especially those with caravans or tents, where there are lots of crevices for them to hide in.

The movement of goods such as timber via train or road haulage could also easily

introduce hornets if they are harbouring in the stored items.

Frontline role

Because of this, it wouldn't be a surprise if Asian hornets become a common sight in the UK in the future. If their population becomes too high for Defra and the AHPA alone to control them, professional pest controllers may be authorised to take action. However, further training and better awareness may be required before pest professionals find themselves on the frontline.

French lessons

Robert Moon has been living in France since 2006. He is the only Brit to hold the French diploma in pest control. Robert, who trades as Applicateur 3D, has been treating Asian hornets in central France since 2014. Here he shares his experience with us.

When the Asian hornet arrived, allegedly via a shipment from Shanghai to Bordeaux in 2004, there were a few sightings in and around the port. Each sighting had to be reported to the authorities with destruction of Asian hornet nests being the sole responsibility of the Pompiers (Fire service). Since then the Asian hornet has spread



Robert Moon has plenty of experience controlling Asian hornets in France

throughout France and its control is now handled by pest professionals.

In 2014 Robert treated just six Asian hornet nests, but 12 months later, he reports that he dealt with over 200 nests. "In 2016 there was a slight decline but that was probably weather related," he says.

"The queen comes out of hibernation in late spring and begins to construct the nest. When there are sufficient hornets to sustain the nest, further queens are produced. A large colony can have many queens in one nest – some say up to 50 queens, others say up to 1,500; such high numbers have not been proven – so I'll stick with up to 50."

Robert told us that they are adapting well to their life in France, originally constructing nests between 20 and 30 metres up in the tree canopy but now also found in garages, attics and stone walls. Their spread throughout France has been monumentally rapid and there are two main reasons for this success:

- First is their ability to have many sovereigns in one nest. These queens can quickly disperse when the nest becomes overcrowded or is disturbed;
- Secondly they are active for much longer in the year than wasps and European hornets. "I have treated live nests in December," says Robert.

Asian hornet nests in trees are usually detected in the autumn when the leaves have fallen and the beach ball shaped nests revealed.

"Unfortunately in France there was a lot of ignorance about how to deal with this new invasive species. To begin with farmers, not wanting to pay for nest destruction, would take it upon themselves to blast them out of the trees with a shotgun – a great way to disperse the queens. Now there is a concerted effort to eradicate them. In our commune, all nests are declared to the Police Municipale, who then contact me to do the necessary.

"I have invested in a telescopic pole, reaching to 20 metres, this enables me to access nests without the need of specialist climbing equipment. From ground level and using bendiocarb I can destroy the hornets within the nest without dispersing them," concludes Robert.



For flying and crawling insects

Available in either 15g ready-to-use sachets, or in a 500g tub, comes a new wettable powder formulation from Lodi-UK – Diarain C40 WP. As it contains 40% cypermethrin, it offers long term residual activity for both flying and crawling insects in domestic, commercial and industrial situations.



Solar panel protection

The Snapfast Bird Stopper prevents birds from nesting under roofmounted solar panels. It is designed to clip onto the inside lip of the solar panel without scratching the solar panel surface. Made from black PVC, it comes in 20 x 1.4 metre lengths, is

easy to fit, requiring no drilling and can be cut to length using a sharp knife or hacksaw.

www.killgerm.com

Moth munchers!

Controlling clothes moths is a real problem. Based in Wiltshire and maybe better known in the horticultural market, the bio-control company, Agralan, is introducing the sale of Trichogramma parasitic wasp larvae in the UK. It will be known ass TrichoControl and is ideal for clothes moths.

Trichogramma evanescens parasitic wasp pupae come supplied on cards, containing approximately 2,400 pupae. These can be hung by the pre-cut side within wardrobes, or in a room close to the infestation.

When the wasp emerges, this tiny insect,

less than 0.5mm, lays its own egg in the clothes moth eggs. Development of the moth

eggs is stopped and more Trichogramma will hatch from the parasitised moth egg.

The wasps have a range of seven metres, and should be placed away from direct sunlight. A second

application is recommended two to three weeks later.











Ornaway now in dishes

The manufacturers of Ornaway Bird Gel, Barrettine Environmental Health, have recently added the supply of this product in pre-filled, easy-to-use dishes.

Supplies of the tube formulation for application via a caulking gun are still available, but these pre-filled dishes provide convenience in application and so a saving in time, explains Barrettine.

Currently the only bird repellent left on the market in the UK, it is to be used within an integrated approach to managing birds that could include housekeeping/cleaning, trapping,

spikes and netting.

www.barrettineenv.co.uk



Rodenticide warning sign

Killgerm has come up with a practical warning sign for pest technicians to use when laying anticoagulant baits outdoors, so as to comply with current requirements.

There is space on the sign for details of the pest control provider, baiting period, areas baited, contact numbers and the rodenticide used to be added. First aid details, such as antidote, what to do if

swallowed, in contact with eyes, and advice to emergency staff come pre-printed on the sign.

Made of PVC foamex, it comes with holes pre-drilled for ease of attachment.

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	<u>www.killgerm.com</u>	

Down and out

Regrettably, primarily due to regulatory issues, the following products are being, or already have been, withdrawn:

- Killgerm Grey Squirrel bait (warfarin) was withdrawn on 31 July 2017 (so no longer available to purchase) and must be used by 27 January 2018;
- Sorexa Gel (difenacoum) and Storm Paste (flocoumafen) will no longer be sold by BASF. The last date for purchase of either product is 26 August 2017 and all supplies must be used up by 22 February 2018.

Pest Test 52



BASIS has made two PROMPT CPD points available if you can demonstrate that you have improved your knowledge, understanding and technical know-how by passing the **Pest Test**.

So, read through our articles on tropical diseases (page 21), bed bug efficacy testing (pages 29-31), the bed bug debate (page 35) and Asian hornets (pages 38-39) in this issue of **Pest** and answer the questions below. Try to answer them all in one sitting and without referring back to the articles.

SEND COMPLETED QUESTIONS to: **Pest** Magazine, Foxhill, Stanford on Soar, Loughborough, Leicestershire LE12 5PZ.

We will mark your **Pest Test** and, if all answers are correct, we will enter the results onto your PROMPT record held by BASIS.

1	What percentage of the global does Dr Drexler estimate are ve	bur ector	den of communicable diseases · borne?
	α) 7%		c) 27%
	b) 17%		d) 37%
2	For bed bugs, what resistance consider acceptable?	ratio	with deltamethrin does EPA
	a) 100x		c) 10,000x
	Ь) 1,000х		d) 100,000x
3	How much does Stephen Dogg bug efficacy trial would have c	ett e ost u	stimate that one residual bed under the <u>draft E</u> PA guidelines?
	a) £13,000		c) £150,000
	ь) £130,000		d) £300,000
4	Which is the only country that top of bed bug infestations?	ICUI	delegates felt is getting on
	a) North America		c) Australia
	b) Norway		d) The Philippines
5	How many queens are typically	y fou	nd in an Asian hornet's nest?
	a) A single queen		c) Multiple queens
	b) A pair of queens		d) They are all queens
6	When were the first Asian horr	nets i	recorded in France?
	a) 2000		c) 2006
	ь) 2004		d) 2008
Na	me:		
Or	ganisation:		
Tel:			
Em	ail:		
PRC	OMPT account number: 200	D	



Managing the invaders

A new 20-page booklet from the Chartered Institute of Environmental Health (CIEH) entitled *Management of invasive species of mosquitoes* is a must have for pest professionals looking to the future.

The booklet outlines the current UK mosquito situation explaining that mosquitoes can create a distressing biting nuisance, which affects the well-being of local residents, posing a major economic problem to the local community in areas where tourism is a main source of income. None of this is life threatening but, with climate change things might change.

Experts agree that climate change will make the UK more vulnerable to the problems caused by mosquitoes. There is already evidence of the resurgence of a number of serious mosquito-borne



diseases in temperate regions of Europe and the USA.

The invasive mosquitoes of concern are Aedes albopictus, Aedes japonicus, Aedes aegypti and Culex modestus.

Mosquito control is quickly becoming an essential part of professional pest management in the UK. Get clued up and download your copy of this useful booklet from the **Pest** Library.



Grab yourself a copy of the ICUP proceedings

So you couldn't make it to the International Conference on Urban Pests (ICUP) this July (see pages 22 & 23 in this issue). Don't panic! You can easily get your hands on a copy of the printed proceedings. And if you're concerned that the proceedings might be too scientific that's not (well maybe for a few of the papers) the case!



For anyone with a interest in the science of pest management the proceedings are an essential addition to the bookshelf.

Contact the 2017 ICUP organisers by emailing chair@icup2017.org.uk to purchase your copy.

Searchable proceedings from all previous ICUP events are also available on the main ICUP website at <u>www.icup.org.uk</u>.

New resistance fact sheet

Rodenticide resistance is a real concern and with no realistic expectation of any novel rodenticides anywhere near the horizon, we need to look after the products we've got.

CropLife International which, as the name implies is primarily a farming-oriented trade organisation, is taking a much more active role these days in the resistance area.

Working closely with the Resistance Action Committees it has produced a new A4, full colour leaflet and accompanying folder which provides a graphical representation of how rodenticide resistance develops. This is useful for those who are new to professional pest management and as an educational handout to customers whether or not they are querying you. Download your copy from the **Pest** Library.



Great for gamekeepers

This new A4 booklet from the Campaign for Responsible Rodenticide Use (CRRU) specifically targets gamekeepers giving them advice to help them control rats in line with the UK Rodenticide

Stewardship Regime. It offers excellent detailed advice for those involved in rodent control where breeding game birds is the primary objective.

By following the booklet's advice gamekeepers will operate in line with stewardship rules, with minimum impact on wildlife and the environment. This will help forestall calls to restrict rodenticide use even further, keeping this important rat control method available to gamekeepers when necessary. Downloadable from the **Pest** Library.





A disgusting product



Disgusting, disturbing and dreadful are three of the printable words that come to mind when you see pictures like this. The product, TrapStik for wasps is supposed to be a wasp trap! The photograph comes from Ontario Canada, not a country you might associate with poor welfare standards but we are reliably informed it was also available in the UK on eBay. Thanks to **Pest** reader, Danny Lyons of Lyons Pest Control in Elgin for sending this in.

Following extensive media coverage, we are pleased to report that the US company that was selling this product, Rescue Pest Control, has withdrawn it. In a statement the company said: "After careful consideration, we have decided to immediately stop selling the TrapStik for Wasps and are directing our retailers, including Amazon.com and eBay, to remove this product from their shelves."

The statement continued: "We are currently working on ways to make this product safer for use around wildlife while maintaining its efficacy at catching insects. Our product engineers are investigating improvements to the TrapStik design so that the aforementioned incident does not happen again. We will not re-introduce this product into the market until we can ensure its safety for birds and other wildlife."

Reckless advice

BBC's *Gardeners'* World magazine has, quite rightly, annoyed another **Pest** reader. Amy Kelly of Brian Kelly Environmental Services in Northern Ireland. Amy explains: "In the April 2017 edition a reader wrote in requesting advice on rats in her compost heap. The *Gardeners'* World team of 'experts' published the following advice: 'Traps and poison are usually the only option, or call in pest control as a last resort.'

"TRAPS outside? Professionals as a LAST RESORT!? Can you believe that? It was in relation to a persistent rat problem in an outdoor situation, with not one mention of protecting non-target species, or even a reminder to follow the label instructions on poisons.

"I tried writing to them about this but never got a response. They did recently publish some reader letters about the original 'last resort' article, but neither of the authors were pest pros, and the advice given was not at all what I would have given."

How sad that such a well respected magazine has relied on lay people pretending to be experts and given such dangerous advice.

As a PS, Amy pointed out that another gardening publication Amateur Gardening published a fantastic article on rat control in the February edition, so not every gardening magazine is giving bad advice, but what a shame that the biggest and, supposedly the best, has been so reckless.

Diary dates

28-29 September 2017

Parasitec 2017

WOW Convention Center, Istanbul, Turkey www.parasitec.org/

24-27 October 2017

PestWorld 2017

Baltimore Convention Center, Hilton Baltimore Baltimore, Maryland, USA <u>www.pestworld2017.org/</u>

15 November 2017

PestTech 2017

Ricoh Arena, Judds Lane, Longford, Coventry, West Midlands CV6 6AQ www.npta.org.uk/pesttech/

22-24 November 2017

FAOPMA Pest Summit 2017

The Empress Chiang Mai Hotel, Chiang Mai, Thailand <u>www.faopma2017.com/</u>

23 November 2017

The SOFHT Lecture Annual Lunch & Awards 2017

Sheraton Grand, Park Lane, London W1J 7BX www.sofht.co.uk/events/2017-annual-lecture-lunch-andawards/

24-25 January 2018

PestProtect 2018

Messe Bremen, Findorffstrasse 101 28215 Bremen, Gemany <u>www.pest-protect.eu/</u>

Need to claim CPD

If you're collecting Continuing Professional Development (CPD) points as a member of BASIS PROMPT then the number you

PROMP1 then the number you need to claim the two points available for reading **Pest** magazine throughout 2017 is:

PC/56963/17/g







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At Killgerm, our aim is to make your job as a pest controller easier and equip you with the newest and most innovative tools and equipment.



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The Titan 200IP is an outdoor, splash proof unit designed to be installed in barns, stables or similar locations



Harmonix Monitoring Paste

Harmonix is a fully traceable monitoring paste and is the first essential step in integrated pest management (IPM)

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Rodenticide Warning Sign

This reusable Rodenticide Warning Sign ensures that the Pest Control Technician complies with current legislation when using rodenticides in open areas



Snap Fast Bird Stopper

The Snap Fast Bird Stopper is an innovative new way to prevent birds from nesting under roof solar panels



TALON® TRACK

With the same palatability as Talon[®] Soft, Talon[®] Track is a new solution that allows the identification of rodent activity



AF[®] Rodent Proofing Cone

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For further information, please call:

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