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THE MAGAZINE FOR THE PEST CONTROL INDUSTRY

issue 130

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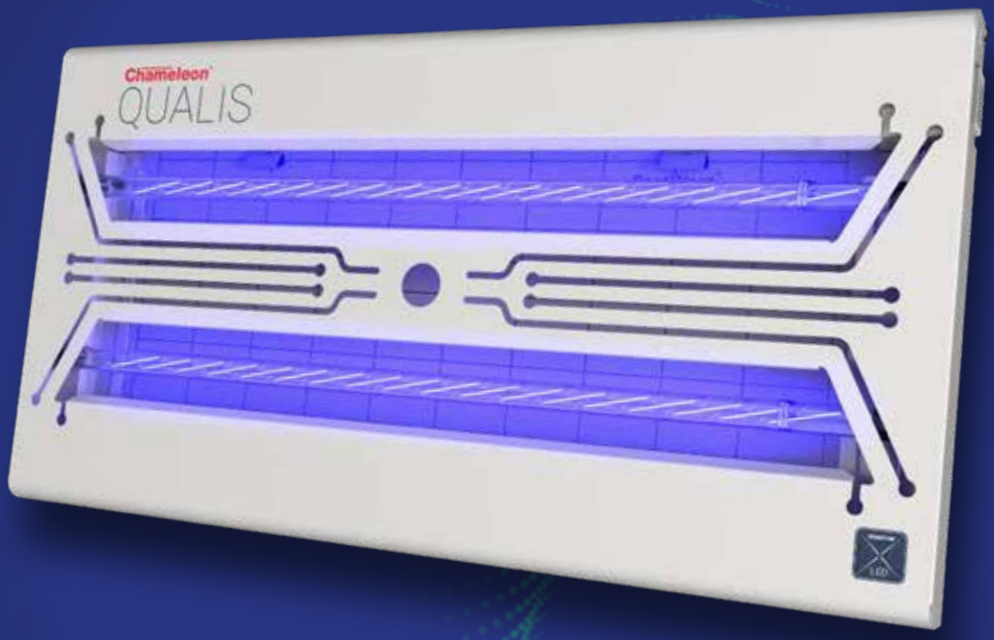

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Dr. Melania Akköse - Killgerm GmbH

Killgerm welcomes Dr. Melania Akköse, who is 36 years old, living in Neuss and joined the team of the technical department of Killgerm in Germany last September.

After studies in biology, Melania did her doctorate at the University of Düsseldorf. She worked for seven years in drug discovery at former Bayer Animal Health, specialising in the control of ticks and fleas. In addition to biological studies on the parasites themselves, a main task was the molecular research on the mode of action of certain acaricides and insecticides and resistances against them. This experience with insects, arachnids and the respective active ingredients helps Melania to support customers. With a team of three biologists, it is now possible for Killgerm Germany to meet the increasing number of inspections and to expand our seminar service. " I'm happy to be part of this team and look forward to many successful years at Killgerm Germany ".

Latest rodenticide surveillance finds stubborn barn owl residues

Rodenticide residues have been found in 88% of barn owls by the latest annual surveillance for the UK Rodenticide Stewardship Regime, operated by the Campaign for Responsible Rodenticide Use. The previous year's figure was 87%.

Since this latest 2020 sample of barn owl remains was collected, CRRU has published an updated and highly detailed Code of Best Practice in Pest Rodent Control and a companion practical user-guide in newsletter format. Both are available widely and free of charge to pest controllers, farmers and gamekeepers, explains CRRU chairman Dr Alan Buckle.

Killgerm on the road!

Don't forget to book yourself onto the next Killgerm workshops or grab your free breakfast at a breakfast meeting with your area sales manager!

Breakfast meetings

14th September- Lincoln

21st September- Cardiff

28th September- Haydock

Workshops – save the date!

26th October – Bocking Village Hall, Bocking

7th December- Leeds

NBC Environment acquired by Orkin

US-based Rollins Inc, best known for its subsidiary pest control brand, Orkin, finalised the acquisition of NBC Environment headquartered at Banham, Norfolk, in early April 2022.

With a £500 Prince's Trust grant, John Dickson, managing director, founded NBC Environment in 1993. Initially, the company centred around bird control using falcons, but it has since grown into a nationwide, full-range pest control servicing business employing over 100 staff. Bird and wildlife management consultancy, such as the recently finalised predator rat eradication feasibility study on the Channel Islands, still remains a specialist core activity.

Norvestor | PELIAS®

Terminix Global Holdings, following its acquisition by Rentokil, has announced the sale of Terminix UK to Norvestor.

The Terminix UK management team said it is delighted with this outcome and is pleased to confirm that it will be the UK's largest independent pest control company.

The company said that the business will continue to remain focused on providing pest-free environments for our customers and a great place to work for its staff.

Norvestor is a leading private equity firm focusing on mid-market businesses primarily in the Nordic region. The team has worked together since 1991, making it one of the most experienced investment teams in Northern Europe.

It has extensive previous experience within the industry and has previously successfully participated in growing a successful European-based pest control business, through diligent focus on customer value and to provide a great working environment for employees.

Through this acquisition, Norvestor is backing and investing in the UK business and in further development of its leading pest control offering.

Norvestor has also acquired Pelias from Terminix Global Holdings. Pelias is a leading Norwegian pest control company and will together with Terminix UK, form part in a new and leading Northern European pest control group with around 600 employees.

Going forward, we will work closely together with our colleagues in Pelias, and we are excited to share best in class practices and environmental service solutions to meet the sector challenges today and in the future, the UK business said.

Glue Traps (Offences) Bill receives Royal Assent

The Glue Traps (Offences) Bill, the Animals (Penalty Notices) Bill and the Animal Welfare (Sentience) Bill all received Royal Assent, as part of a package of measures by the Government to increase protections for wildlife, pets and livestock.

This means that they are now all Acts of Parliament, enforced in all areas of the UK where they are applicable.

It would make it an offence for a person to:

- **Set a glue trap if the intention was to kill rodents or if they knew it could kill a rodent;**
- **Allow or permit someone else to set the trap; and**
- **In addition, if a person passing saw such a trap and did nothing about it, this would also be an offence.**

The Glue Traps (Offences) Act will ensure licences to use glue traps are only issued to professional pest controllers on "an exceptional basis", to preserve public health or safety where there is no suitable alternative.

Licence holders would then need to follow conditions set out in the licence to ensure the welfare of any rodents is upheld, such as regular monitoring of set traps.

This means those found to have used a trap without a licence could face up to six months in prison and/or an unlimited fine. The ban will come into force in the next two years.

This will be managed through a licensing regime, although the details of that regime are yet to be decided. You can continue to use glue traps during the two-year lead-in period set out by the Government, during which the licensing scheme will be created and rolled out.

Ian Andrew, BPCA chief executive, said: "it's critical that pest management has a voice during the building of any new licensing system that affects our industry."

What has the pest control industry been doing to protect the use of rodent glue boards?

- **The Pest Management Alliance (PMA) has been working hard to preserve the use of rodent glue boards by trained professional pest controllers**
- **The PMA, comprising the BPCA, NPTA and CIEH, have a key role in stewardship of rodent glue boards**
- **Government was lobbied to consider the continued use of glue boards for pest management professionals**
- **The NPTA, in consultation with the BPCA through the PMA, have been asking members to state their opinion on the bill. They have held consultation meetings and launched a member poll to ascertain members viewpoints.**
- **The BPCA have run a 'Save Professional Glue Boards' survey and talked to members and lobbyists**
- **The PMA 'code of best practice – humane use of rodent glue boards' is to be followed by all professional pest controllers**

Best practice in the humane use of rodent glue boards is featured in relevant training courses for the industry

Killgerm Training offer free training 'Rodent glue boards: best practice' visit https://training.killgerm.com/rodent-glue-boards-best-practice/

Honey bees and best practice

A focus on ethical removal and relocation of this iconic species

Pest Control News hears from Clive Stewart the admin of the UK Bee Removers, a not-for-profit group that participate in the ethical removal of honey bee colonies. Clive has a beekeeping and pest control background, running training programmes in safe removal of established honey bee colonies.

Honey Bee Removal

The year has been steadily warming up since the middle of March and some members of the pest control industry will have already had calls for honey bee situations. Many will have even carried out some removals by the end of April. Honey bees are often described as wasps by the general public when enquiring about their potential stinging insect issues at this early stage of the year (spring). However, unlike the wasps who have an undeserved reputation for being notoriously bad tempered and unimportant to the ecosystem, bees have long been looked upon as beneficial insects and are a little more complex to deal with.

Beekeeping has become popular

The current popular trend of self-sufficiency and eco-friendly living has brought beekeeping into a boost of popularity in recent years. As a consequence of the popularity of beekeeping, instances of honey bees swarming into buildings and places of inconvenience have become more prevalent. This may be due to poor management skills, or colonies being abandoned and left to fend for themselves when the new beekeeper has lost interest. Of course, bad beekeeping practises cannot be blamed for all the feral colonies that are present, as there has always been a level of natural existence in place. Sadly, the bees are not always welcome and pest control inevitably gets called upon, at some stage, to attempt to relieve stressed home and business owners of these amazing insects.

Are honey bees protected and what about insecticides?

Whilst they are not protected, treating a colony of honey bees by chemical means should only ever be a very last resort. In the hierarchy of use, there are many non-lethal options available way before even considering such drastic chemical measures. It should be mentioned that chemical treatments are often ineffective too, due to many factors that can't always be seen by those applying their chosen insecticide. The position of the colony and often the structure of the building come into play here.

I should mention that insecticides are labelled in a way to discourage their use against bees. After all, they are such crucial pollinators and where would we be without the bees? Manufacturers have removed bees from the 'target species' section of product labels altogether. However, the wording of some product labels is less than helpful in identifying their use. The self-interpretation of those that remain has often left the pest technician in a quandary as to whether or not they are able to use them at all. *(Tech ed. note 1 – The Health and Safety Executive (HSE) have confirmed "It is acceptable to use a product with a claim against flying insects against honey bees (provided the label does not specifically prevent use against bees) but as the HSE website (Honey bees and biocides - Biocides - HSE) and the Industry code of practice states, only as a last resort." Tech ed. note 2 – just because you can doesn't mean you should, hence this article…and note that trade associations do not recommend any insecticide use for honeybees)*

Live bee removal

As a consequence, live bee removal has gained some popularity in the pest control industry, and is fast becoming the go-to solution for honey bee problems. This has a number of productive outcomes for those businesses that choose to take up the activity of bee removal. It has a positive environmental image for those companies involved. This can be utilised as good PR through social media, and news outlets. It also reduces the reliance on chemicals for such situations and provides a more profitable result when carried out correctly.

Setting up for live bee removal

There is a considerable outlay required in extra training, insurances, and equipment to be able to carry out honey bee removal. It may not fit all business models, as there is a level of aftercare to take into consideration on completion of the removal. Here, it is helpful to have a more detailed knowledge of the honey bee's lifecycle, and an understanding of what is needed from a colony to complete a successful removal. Those pest control companies that do carry out this type of work often employ the assistance of local beekeepers to take up the aftercare side of the operation. Beekeepers are often able to supply suitable accommodation for the homeless colony. Some pest controllers actually take up beekeeping too. It is an amazing and fulfilling pastime and is known to help relieve stress.

Scenario - background

I'm often presented with scenarios where honey bee colonies are deemed impossible to remove for a number of reasons. One such scenario recently turned up, in the south of the UK, where a long established honey bee colony was causing issues in a commercial office block. It had been reported that bees were congregating on the outside of the building, and honey was pouring through window crevices, and ceiling joints. A survey was authorised, and I attended site to assess the situation and carry out the necessary checks. The bees were outside of the building giving the appearance that a swarm had just arrived. However, after talking with members of staff it transpired that the colony had been there a number of years, and had been treated with insecticide, historically, many times before. This had clearly not worked and the reason why was to become clear later on in the operation..

Immediate action was required to reduce stress to the colony and anxiety of the office staff. A bee vacuum was used to remove a number of bees from the face of the building and the situation was brought under control temporarily. It was clear this colony would require removing to resolve the situation permanently.

Scenario – asbestos!

On completing a thorough survey, it was found that the bees were in fact potentially situated behind an ACM (asbestos containing material) fascia. The onsite asbestos register had highlighted asbestos in certain areas. As a precaution, a refurbishment and demolition survey were conducted on the suspect area by a qualified asbestos team. Test results came back as positive for Chrysotile, a form of asbestos deemed low hazard, but still requiring correct removal procedures. Due to the nature of the ACM, and the quantity, it was classed as an unlicensed removal. It

was still going to need the expertise of an appropriate asbestos removal company. The team I was working with were confident that, as long as they were suitably protected from the bees, the removal would be a simple and straightforward task.

A work plan was done and the necessary risk-assessment and method statement (RAMS) were submitted along with the quote for the works. The company involved were adamant that the bees were to be saved and all works were approved and accepted. As the asbestos removal was unlicensed I was able to assist with the onsite operation. However, had it been a licenced removal we would, at the time, not have been able to enter a sealed containment area. I have since completed the necessary training for a licenced asbestos removal operative and can now enter sealed asbestos removal areas if required.

The scaffolding had been erected a number of days prior. On the morning of the removal the weather was relatively pleasant and the asbestos team arrived on time. All necessary preparations were carried out as outlined in the plan of works and RAMS. Techniques were implemented to minimise fibre release and appropriate respiratory protection was worn should there have been any unexpected breaks. The removal of the asbestos took all of around 45mins to complete. This was done by slowly removing nails and applying suppressants to minimise any fibre release into the work area. Then starting on the board furthest away so that we could assess how defensive the colony was going to be. A little use of sugar water over the bees helped keep them calm during the operation of exposing their comb.

Scenario - removal

On exposing the colony, it was clear what had happened and why the historical treatments had not worked. The colony spanned an area of around 1.9m by half a meter, in a void a little more than 230mm deep. As it faced south east it was in the sun for the majority of the day, which consequently caused the wax comb to collapse. Hence the honey running through the ceiling & window crevices and the reason why the bees had evacuated their home. When this happens, and it is quite common in flat roofs, it makes the removal a little more difficult. This is because the comb is not in any uniform shape and cannot be easily framed. The colony took around four hours to frame and hive. Exterior ply was used for the reinstatement of the fascia, which was primed, and the top coat applied the following day.

Scenario – insecticides not appropriate

The application of insecticide in situations such as this is futile. This is due to the position of the comb in the cavity stopping the formulation getting any further than the first piece of comb. What cannot be seen, from the images provided, is that sat behind the timber frame (on which the ACM was mounted) is the edge of brickwork that prevented the formulation even entering the colony. Of course it may have killed a thousand or two but at the height of the season a queen can replenish those numbers within a day, and there are usually around forty to eighty thousand bees left. The only sure-fire way to ensure your chemical will do the job would be to open-up the cavity to apply it. However, at this point it would be just as cost effective to remove live than treat and clean up the contaminated colony and have it incinerated, as it cannot go to land fill.

Potential complications

Bee removal does not come without its own set of complications. Probably unknown by the majority of pest controllers, honey bees are monitored by the government for diseases. This is because they are classed as livestock, and there are a number of notifiable diseases that need to be observed for during a removal. The removal work does cause a level of stress to the colony and this can be a trigger for a disease outbreak. Techniques and methods of removal reduce these stresses to a minimum, and a good underlying knowledge of basic beekeeping helps in their recovery. Whether you choose to keep the bees yourself or pass them to a beekeeper it is essential to keep records of where and when a colony was removed, and to quarantine such colonies in an isolation apiary registered with the National Bee Unit.

Costs?

The costs for live bee removal work are very much dependant on the specifics of each situation, and added services of the individual business model. Some situations at height will undoubtedly be more costly than those that may be reached from the ground behind a removable panel. It's been noted that some home insurance providers have recently started to look at including honey bee removal cover. Of course this would be policy dependant, and is at the very early part of its development.

Final thought!

I think most pest controllers would agree that bees are important to the future of the planet as are a number of other insects, and through live bee removal the industry is doing its part in ensuring that bees have that opportunity. It would nice to consider that going forward in our work, we hold the thought that in everything we do, we do it all for the love of bees.

Is TikTok a useful platform for pest controllers?

www.pestcontrolnews.com @pestcontrolnews facebook.com/pestcontrolnews

Ah, social media, where would we be without you? Well, we'd maybe get on a bit better with each other BUT getting a company's name out there would remain that little bit trickier. We'd still be constrained to websites and hoping that the site shows up in someone's search for 'kill rats in house'.

Facebook has led the charge with accommodating businesses - big and small. Potential customers can see reviews, comments and regular updates when researching where to spend their money. The platform doesn't restrict you to one medium either, you can upload photos, videos and links easily.

Twitter and Instagram are not quite as business-friendly but, as part of the 'big three' of social media, still are worth updating. They still expose you to a range of potential customers and not everyone checks each app with the same regularity.

Then the internet does what it is prone to doing and thrusts another social media platform into the world. To stand out, these platforms must be a bit different. Nobody needs Facebook 2. So then it's up to businesses to decide if they want to navigate a new app, decide they like the arsenal they have, or explore other options for marketing.

The current young upstart is TikTok. It doesn't exactly scream 'THIS IS PERFECT FOR PEST CONTROLLERS'. Its reputation is more of an app filled with young people dancing to appeal to under-25s.

And…yet… it has its uses.

The way you use TikTok has to be different to how you use the other platforms. While the same people may have accounts on every app, what they expect from each one changes. That doesn't mean you have to do what everyone else does, people just expect to be truly engaged.

Some jobs which may seem dull on paper have found an audience on the app. Millions of people have watched people steam clean carpets, paint banisters neatly or create soaps. There's something satisfying about the processes in many industries. Why wouldn't anyone want to see how wasp nests are removed?

It would not be a revolutionary step to set up a pest control TikTok – pest controllers are already using it and you may be reading this having just updated yours - but it is a way to engage with people you otherwise might not. Perhaps the people you show your job won't ever use your services but there's always the possibility you'll get some ad revenue. Realistically, though, upload videos to show people what you do rather than expecting it to add to your income.

Whether you use the app is a personal choice. If you hate editing and do not have someone in your team who enjoys it, it will be something you abandon later. If you love what you do and want to show people, it's great. Try to focus on something when uploading. Do you want people to learn from your content, or do you want some satisfying clips that will give viewers an odd sense of peace?

Of course, you may be too busy to add another social media platform to manage, particularly one which requires some editing. If you're self-employed with nobody else working for you, it's unlikely the first employee you'd want to hire is a social media manager. If you have some free time and want a little extra boost to your business, why not give it a go?

Insect Identification: what you really need

Essential requirements to enable more accurate insect identification

The need to 'know your enemy' is essential in public health pest control. If we know the identity of the insect pest we're dealing with, we can then understand the biology and source of the problem while taking care to choose the correct product for control. In fact, have a look at the 'ID corner' in this issue for interest. If you can identify insects yourself, great! If not, you should seek out an entomologist for accurate insect identifications but be aware of the limitations of photographs of insects…and read on for the tools you need to identify insects, mainly physical sample – the insect itself!

Having been asked recently about identifying insects via photographs, a response of an entomologist was -

'It's difficult to explain the best parts of an insect to photograph. To be honest, I never recommend this at all because almost every insect ID requests, via photo, is met with the 'please send a physical specimen' response. Being able to see, clearly, the wing venation on flies is one essential feature for an accurate ID. With various other insects you need to see different, sometimes obscure, anatomical features for a reliable identification.

The number of tarsal segments, on each pair of legs, is useful when identifying families of beetles and this will include antennal structure among other features. Setae ('hairs') and spiracles (breathing 'holes') need to be observed on certain moth larvae. Looking at fleas, their combs and the bristles that make them up are important. These are all detailed structures that are sometimes difficult to see with a microscope, never mind via photo. This list goes on… including cerci (the tapered 'projections') protruding out of the back of cockroaches, pedicels (nodes) and fringed acidopores (hairy 'bum' if we can get away with saying that!) for ants and so on. The banding on mosquito legs is yet another insect ID feature but mosquito legs often fall off due to the action of pyrethroid insecticides or electronic fly killers.

Sometimes the biggest challenge is the condition of the sample – sprayed by the pest control operator, squashed by the resident, stuck on a glue pad, damaged in weak packaging during postage. Worse than that is the arrival of live flea or bedbugs or more sinister

(no comment!) in the post – please do note postal regulations and send samples securely. I do confess that it can be like Christmas morning when opening a package that contains an interesting insect!'

With the above in mind, we write about what you really need for insect identification.

1) Stereomicroscope

A stereomicroscope is a low-powered magnifying tool, where the magnification can be varied by changing the ocular lenses (usually a choice of x10, x15 or x20) or the objective lens (usually a choice of x1, x2 or x3) or a combination of both.

Ideally, it is an advantage to use a stereomicroscope fitted with in-built illumination, within the examination stage and behind the objective lens, which provides the user with the ability to view specimens clearly. A digital camera can be fitted to the ocular lens with a correct adaptor.

The use of additional independent light-sources may be required to illuminate specimens from certain angles, in order to highlight important features/structures such as setae, spiracles and punctures, in order to confirm accurate identification of some insect specimens.

2) Tools for handling and presentation of insect specimens for examination

Many insect specimens requiring microscopical examination are very small and rather delicate, being very easily damaged if mis-handled. The use of ultra-fine forceps, dissecting needles and fine-artist paint brushes should be employed to move very small insect specimens being displayed on the stage of the microscope. Placing the specimen in a small petri dish or watch glass is a good idea so that it can be moved around during examination. If lateral, anterior or posterior views are necessary, placing the specimen onto a lightly tacky glue blob at the required orientation within the petri dish assists viewing considerably, unless the specimen has already been permanently mounted on card or has been pinned.

3) Use of a mobile phone camera versus a dichotomous key for insect identification

The facility of a built-in camera on most mobile smart phones is increasingly used by pest controllers as a method of identification of pest insects. It is seen as a 'short-cut' to collecting and sending a physical sample to an insect identification department.

Although photographs of pest insect specimens are not to be completely ruled out in helping in the identification process, they should never be used as a substitute for a physical sample if a more accurate conclusion is to be achieved.

Many pest insects in the developmental and adult stages are very small, so it is necessary to view the necessary identifying features under microscopical magnification. The important features often include surface structures on the body of the insect such as setae, spines, spiracles, the number of segments on the antennae, or even the structure of the genitalia. These features are usually not visible on photographs produced by an average image captured on a hand-held mobile phone camera, as the resolution is rarely acceptable.

The use of a dichotomous key to identification is the most useful method to help in determining the identity of an insect specimen, although it may not always guarantee the correct outcome. The amount of experience already gained by the user of the key is important, combined with access to supplementary background information regarding the habitat, life cycle and distribution of the relevant insect specimen under examination.

4) Posting and packaging of insect samples

Ideally, a physical sample of an insect should be collected and placed inside a small robust specimen tube (with a leak-proof, screw-top lid) containing some cushioning medium such as paper or cotton wool.

Soft-bodied insect larvae may require more care/cushioning or storage in a preservative in order to prevent decomposition in transit. The specimen tube should then be encased in bubble-wrap and place inside a very robust envelope, enclosed with detailed information regarding the address of the sender and details of the location in which the insect sample was discovered.

The correct postage should be paid if the sample is to reach the recipient on time. Several samples may be lost from envelopes which are too weak to contain the specimen tubes, bursting open during the mail sorting processes. Samples sent to an insect identification provider should be accompanied by further information. For example, a completed 'Request For Insect Identification' form - https://www.killgerm.com/technical/insect-identification/ .

5) Useful references for insect identification

There are so many reference texts available for insect identification that entomologists will have cupboards full of them. Dichotomous keys are a mainstay of insect identification and pictorial keys can also be useful.

Published since 1949, the Royal Entomological Society handbooks for insect identification are a 'go to' resource and can be obtained here https://www.royensoc.co.uk/publications/handbooks/

The handbooks that are out-of-print can be downloaded as free pdf's here https://www.royensoc.co.uk/publications/out-of-print-handbooks/

There are a couple of interesting general references here, that can usually be picked up cheaply from second-hand outlets:

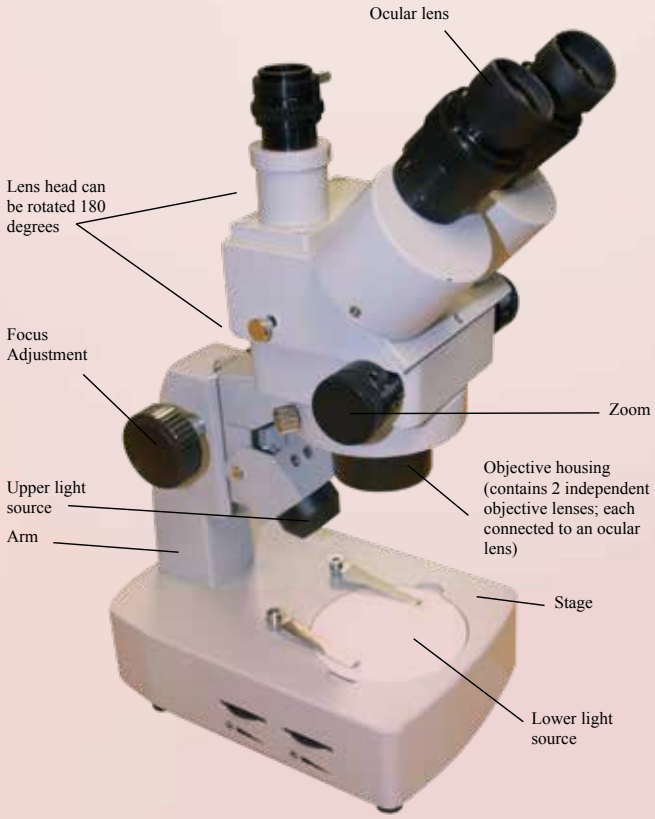
BUSVINE, J. R. 1980. Insects and hygiene : the biology and control of insect pests of medical and domestic importance, London, Chapman and Hall.

CHINERY, M. 2012. Insects of Britain and Western Europe, A & C Black.

Want to become an entomologist?

Here is an interesting and useful article from the Amateur Entomologists' Society, all about becoming an entomologist.

https://www.amentsoc.org/insects/getting-started/



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Another RSPH Level 3 success

Killgerm Training are delighted to announce yet another one of their candidates has been awarded RSPH Level 3 Award in Pest Management. Chris Emmans of Derbyshire-based Musca Pest Management Services joins the elite group of Pest Professionals who hold Level 3 qualification.

Chris said of his achievement

"I am over the moon to receive my certificate today. Researching for my exam and assignments has considerably bolstered my knowledge and this qualification has allowed me to demonstrate my practical Pest Control skills".

Mark Butler, Company Biologist at Killgerm commented "We are really, really pleased for Chris who after passing the written exam then embraced the assignment element and produced some high-class work, reflecting his skills and knowledge. RSPH Level 3 Award in Pest Management is the "Gold Standard" industry qualification and allows the more able Pest Professional, like Chris, to move beyond Level 2. Our industry now has a clear pathway and, in an age where professionalism should be encouraged, this is another demonstration of Killgerm's ability to lead from the front and to offer valuable options to the industry"

Dr Richard Burton, Director of Qualifications at RSPH said "This is a tremendous achievement by Chris and well-deserved. The RSPH Level 3 Award in Pest Management always creates a great deal of interest at trade shows and the number of learners registering for this qualification is growing"

RSPH Level 3 Award is an externally accredited qualification from The Royal Society for Public Health and is aimed at experienced pest control operators who wish to move beyond Level 2. It consists of 2 components: a written exam and assignment work.

Chris Emmans receives his certificate from Mark Butler

For more details of RSPH Level 3 Award in Pest Management, please contact Lisa Wales 01924 268445 or training@killgerm.com.

We are pleased to announce that the programme for ICUP 2022 is now available on our website: ICUP 2022 - PROGRAMME AT A GLANCE. Please click on the '+' to see the titles of the various papers within each session.

Each day of the conference begins with a plenary presentation by an invited speaker from centres of excellence including: the World Health Organisation, the European Centre for Disease Prevention and Control, the Barcelona Supercomputing Centre and Fordham University in New York. Between them they will cover a range of fascinating topics such as vector control in the urban environment, relationships between vector-borne disease and climate change and the evolution of pests within the urban environment.

After the plenary sessions there are several parallel sessions with speakers from around the world. These deal with specific topics such as mosquitoes, termites, bed bugs, ants, cockroaches, rodents and birds and cover both chemical and non-chemical control. In addition there is a poster session and a range of workshops where delegates have the opportunity to discuss particular topics in more detail. In total, the programme comprises around 70 oral presentations and 50 posters. Read more about the speakers. Throughout the conference the breaks allow delegates to mix and engage in informal discussion and, of course, there is the conference dinner on the Tuesday evening.

Delegates can register and/or book a hotel at preferential rates for ICUP 2022 via the website.

Although the pandemic has delayed this conference by two years, the final result is very stimulating. This content will appeal to all involved in urban pests and their management. We look forward to engaging with the ICUP community once again!

Dr Rubén Bueno
Chair of ICUP 2022 Organising Committee

10th INTERNATIONAL CONFERENCE ON URBAN PESTS

JUNE 27-29

Rare UK eagle's rodenticide death shines spotlight on need for responsible rodent control

A poisoned white-tailed eagle found in Dorset is dramatic and regrettable evidence of the need for universally responsible use of rodenticides, states the Campaign for Responsible Rodenticide Use.

"Whether caused by deliberate abuse or unintended secondary poisoning from eating poisoned rodents, this incident rightly focusses attention of how rodenticides are used,"

says CRRU chairman Dr Alan Buckle.

Under the UK Rodenticide Stewardship Regime, operated for an HSE-led expert panel by CRRU since 2016, rodenticides authorised for professional use can only be purchased by competence-certified individuals. Their practical use by pest controllers, farmers and gamekeepers alike is allowed only by trained people.

A highly detailed Code of Best Practice along with practical 'How to...' newsletter have been made available widely by CRRU and can be downloaded from thinkwildlife.org/downloads.

Media reports say brodifacoum was the rodenticide that may have been involved in the rare eagle's death. Brodifacoum is approved for use by HSE under strict conditions in and around buildings and in sewers. The eagle was found on an unnamed Dorset estate in January, having been released on the Isle of Wight in a reintroduction programme. White-tailed eagles had become extinct in the UK in the early 20th century.

Police and other government officials carried out an investigation which was inconclusive and is now closed. CRRU's Dr Buckle suggests that finding the cause and a culprit, if there is one, for incidents like this can be impossible because the victim may have travelled many miles from the site of exposure.

Downloads

Code of Best Practice: thinkwildlife.org/download/crru-uk-code-of-best-practice-2021/?wpdmdl=18095

'How to…' newsletter: thinkwildlife.org/download/crru-newsletter/?wpdmdl=18197

THINK WILDLIFE
Campaign for Responsible Rodenticide Use

THE CHALLENGE OF BED BUGS: WHY ARE THEY SO HARD TO CONTROL?

Bed bugs are one of the most challenging pests to eliminate. They have adapted to live in close proximity to humans, as well as other mammals and birds, and feed on our blood during the night.

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While they don't transmit disease, they are of huge social and economic importance. The presence of bed bugs can lead to discomfort from bites, lack of sleep and psychological stress. In the hospitality industry, infestations significantly reduce the value per room (Take Care Termite & Pest Control, 2018) and can result in costly litigation (close to $24k per incident) with reputational damage difficult to quantify. So what makes them so difficult to control? Below is a summary of the main reasons we require skilled Integrated Pest Management (IPM) practices for the rapid detection and treatment of infestations.

1) Lack of early identification

A single pregnant female can lead to an infestation of several thousand within 6 months. Early detection and treatment of infestations, particularly in close proximity housing, is important in containing populations. This is sometimes slow to achieve due to a lack of familiarity in residents about the signs of infestation (Bennett et al., 2016), such as blood spots on the sheets and the presence of bites. In fact, most people don't react to bites (Goddard, 2009), and because bed bugs are most active during the night, residents may not notice an infestation until the population has grown large. As part of an IPM scheme, active participation in control efforts from residents and building employees have demonstrated improved control. This has been achieved through brief education and training programs (Bennett et al., 2016; Stedfast and Miller, 2014; and Alizadeh et al., 2020).

2) Hidden harbourage sites

Bed bugs hide in the cracks and crevices of many locations, mainly in the bedroom, including the mattress and bedframe, bed side table, chairs, loose skirting, and behind loose wallpaper. These hidden locations make the process of locating their resting sites and delivering treatment both time-consuming and difficult to achieve.

3) Ability to survive long periods of time without a blood meal

An adult bed bug can consume double their body weight in blood (approx. 10mgs blood per bug; Johnson, 1941; Rukke, 2014). This allows bed bugs to survive for several months in between meals, with survival up to one year in cooler conditions (Johnson, 1941). Leaving a property or room vacant for a period of time is not an option as a control strategy.

4) All active lifestages and both sexes feed on blood

Unlike many other blood-feeding pests such as mosquitoes, the males, females and nymphs of bed bugs all feed on blood. The nymphs are very small: a first instar nymph is approximately 1.5 mm. Their small size, coupled with their ability to harbour in hidden crevices, makes creating direct contact with treatment, a challenge.

5) Their ability to hitchhike and re-locate

Bed bugs are found in a range of locations where their human hosts sleep, such as within homes, hotels and dormitories, as well as less usual locations such as night trains, taxis and second-hand furniture. There has been an increase since the 1990s in bed bug infestations, which has been largely attributed to international travel and a bed bugs ability to hitchhike (Kells, 2006). Bed bugs also naturally disperse as the females seek refuge from males following mating.

6) Bed bug resistance

The chemical toolkit used to control bed bugs is being challenged due to an increase in bed bugs with resistance to insecticides and also pressure to reduce the amount of chemicals going into the environment. Bed bugs can develop resistance to not only pyrethroid insecticides, but also combination pyrethroid-neonicotinoid insecticide products in as little as one generation under lab conditions (Gordon et al., 2014). There is however, a "cost" to the bed bug of evolving such resistance, reducing their fitness overall, reducing egg-production and life-span for example. This means that resistance to insecticides is unlikely to be maintained through bed bug generations so long as careful resistance management practices are used (Gordon et al., 2015).

Integrated pest management as the solution?

Integrated Pest Management involves a combination of carefully designed practices that include monitoring for early detection of pest populations, a combination of chemical and non-chemical treatment, and evaluation (including post-treatment monitoring). Traditional IPM practices for use in bed bug control have not received unanimous support as they have been developed for agriculture,

where there is some tolerance for low-level infestation. With bed bugs there is an argument that even one bed bug is too many. For systemic infestations, such as in multiple-occupancy housing and apartment blocks, integrated pest management practices have been demonstrated to be the most effective means to address bed bug problems (Cooper et al., 2009; Wang et al., 2009; Potter, 2011; and Rukke et al. 2022).

There is a growing consensus and demand for early detection and post-treatment monitoring products (Crawley and Bawden, 2021). Visual inspection can be time consuming and requires specialist training, meaning that the effective control of bed bugs can be resource-intense and expensive.

We'd like to highlight the availability of BugScents® as an effective, long-lasting monitoring and early detection product. BugScents® is a patented, pheromone-based bed bug lure developed by Arctech Innovation from the London School of Hygiene & Tropical Medicine. The lure is the result of 10 years of research, and in a slow-release, long-lasting formula, attracts bed bugs (males, females and nymphs) to a trap both in the presence and absence of a host. The lure is compatible for use with a variety of trap types, including the pitfall and volcano designs and achieves up to 100% detection for 12 weeks.

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Article written by Sophie Wulff, PhD. Head of Strategic Partnerships, BugScents.com. Arctech Innovation. We manufacture and sell a patented, nature-inspired, bed bug attractant for use in monitoring devices for rapid detection of bed bug infestation or post-treatment evaluation. Available at Killgerm.com. For enquiries, please contact sophie.wulff@arctechinnovation.com

Insect immobilisation spray gains traction in the food industry and waste management sector

A REMINDER – WHAT IS THIS INSECT IMMOBILISATION TECHNIQUE?

A 'molecular mesh' / 'sprayable entrapping' product (Vazor® Provecta), for insect control, is described as a resistance-breaking and novel technique that causes external immobilisation of target species.

'Molecular mesh'

Crucially the 'molecular mesh' works purely by physical means (by external immobilization) and, as confirmed by the Health and Safety Executive, falls outside of the definition of biocidal products and therefore the requirements of the Biocidal Products Regulations.

External immobilisation

Based on a cross-linking network structure of organo-modified siloxane '3D IPNS' technology the product is coarse sprayed directly, or fogged directly (topically), to target insects and other arthropods to immobilise them.

Target pests

Target species include bedbugs, cockroaches, spiders, ants, flies & mosquitoes and stored product insects.

Immobilisation times

Regarding bedbugs, when applied directly at a 0.1% dilution, 95% of individuals of a pyrethroid-resistant strain were knocked-down (immobilised) immediately. After 24 hours, 98% of the bedbugs were still knocked-down (immobilised) with a 95% kill (mortality) after 48 hours.

Areas of use

The areas of use are many and varied, both indoors and outdoors. These include the food industry, warehouses, hotels, domestic premises, agricultural sector, waste sites and more.

With the food industry and stored product insect control in mind, the product can be used in the presence of stored products and no waiting or withdrawal periods are required.

INSECT IMMOBILISATION SPRAY GAINS HACCP CERTIFICATION (FOOD SAFETY PROGRAMME)

The immobilising spray Vazor® Provecta, with a physical mode-of-action for insect control, has received HACCP international certification. The HACCP international certification (food safety programme) is an international standard defining the requirements for effective control of food safety. The certificate means that the product meets stringent quality and safety standards.

Key points are:

- Compliance with standards - work in accordance with standards.
- Application possibilities - with the certificate granted, there is a possibility to use products in a wider range of locations.
- Efficacy and safety - only proven and effective products can receive certification.

Why it is so important?

Thanks to the HACCP certification, products can be used during disinfestation procedures in the food processing industry, while maintaining a full safety profile.

Why consider HACCP-certified products?

Public health pest control products, in their design and use, need to fulfil key aspects of food safety to gain HACCP certification.

Pest control products, in order to receive HACCP certification, need to fulfil the key aspects of food safety in their design and use. Food safety technologists carry out detailed checks of products and cover the following:

- Specs and materials: the product formulation and any food safety hazards associated with it
- Toxicity: toxicity to mammals and allergic affects to humans
- Contamination risks: does the product label and container feature safeguards to stop contamination occurring
- Operating/ user instructions: clarity of label directions / instructions, regarding application rates and methods, to protect food areas
- Consequences of error: are end-users conversant with of the effects of improper use of products e.g., choosing the wrong product or an unsuitable application technique
- Batch and process controls: are records readily available so queries over products can be resolved
- Packaging and labelling: Containers are tested regarding adequacy for intended use and whether they avoid the chance of accidental release or over-application

The checks are detailed and the main benefits for food businesses are an extra level of reassurance that HACCP-certified products are compliant with standards, suitability for intended use and appropriate for use in food-handling areas.

INSECT IMMOBILISATION SPRAY - USE IN WASTE MANAGEMENT

As well as gaining traction in the food industry the immobilising spray Vazor Provecta, with a physical mode-of-action for insect control, is being used increasingly in the waste management sector. A main target pest for waste management sites is houseflies *Musca domestica*. An example of application is shown below.

Place of application

Waste hall of 50 x 100m

- There are 4 pipes, each being 50 metres long, arranged 10 metres apart from each other.

- There are 28 nozzles on the length of 100 metres.

The nozzles are at 0.30 mm with a droplet size of 80 microns are being applied. The installation has a pressure of 5.5 bar. The nozzle has air support which aids application.

The plastic waste contains household waste together with food leftovers. These bales are stored indoors and attract houseflies as well as containing cockroaches at all life stages.

Where insect pest activity is low, the stored bales are treated with the product to prevent the population from spreading

In cases of high levels of insect pest activity, further treatments are undertaken. The product is also applied on the top of the waste mounds. In this case, the product is applied with a low drift 0.3 mm nozzle.

Key points

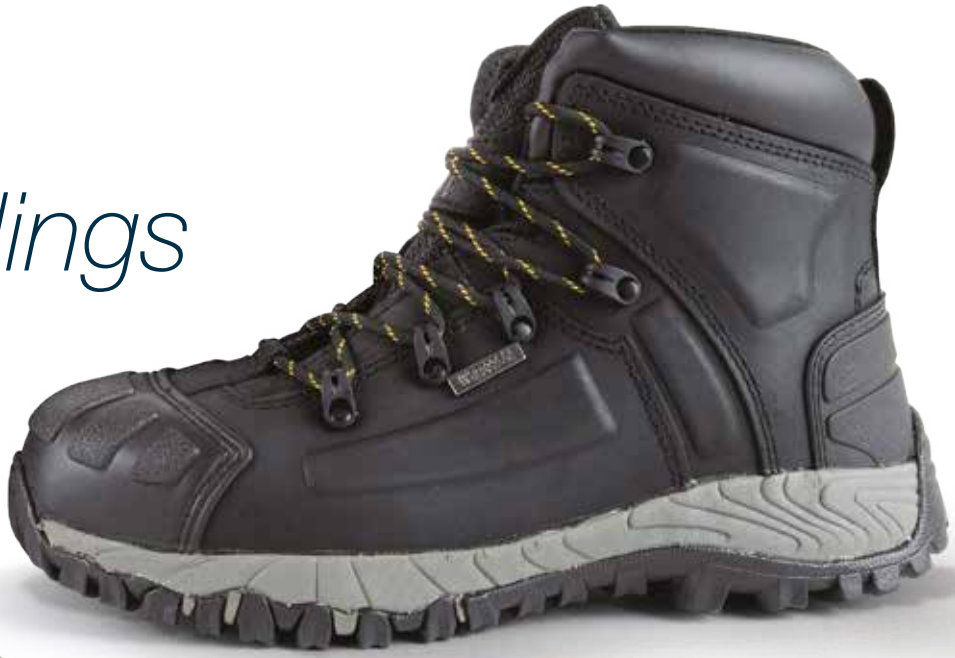
In summary, additional and flexible options for insect control are always welcome, especially when products are:

- Physical in their mode of action
- Exempt from stringent BPR requirements
- Broad and flexible in the range of target pests and areas of use
- Useful in managing resistance, especially in troublesome bedbug jobs
- Able to be used in the presence of stored products
- Non-residual with no waiting / withdrawal period
- Non-toxic residues
- Non-flammable

Although not a ‘silver bullet’ ‘molecular mesh’ technology for arthropod control, in conjunction with other methods, has already become an important part of the armoury of forward-thinking pest control operators.

Go where
the rats go

In & around
buildings



Open areas &
burrow baiting

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The proof is in the proofing!

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Proofing against pests is one of the key elements in integrated pest management. It isn't just the areas to be proofed but the materials used. Anyone can proof a hole or seal a gap. Where the pest control expertise comes into play is using your professional knowledge and appropriate materials. We have all seen poor proofing, often carried out by people who have little knowledge of pest biology and behavior. Following the risk hierarchy, proofing comes at the top (along with environmental changes) way before chemical usage. Therefore, proofing should be a priority consideration.

Appropriate recommendations can be made to clients following a thorough survey. All the standard findings such as any cracks, broken drain covers, holes into wall cavities, should be reported to the client or undertaken by the pest management provider. We all understand that taking remedial action can prevent pests gaining access initially and prevent problems becoming worse. However, there is always the decision to be made during an active infestation to identify, if possible, original access points and the timing of when to seal. If the issue is drains, then they should always be sealed as soon as possible. Internal holes should be sealed at the pest controller's professional discretion. Sealing a pest into a premises is not always the best first course of action. Proofing can also change the movement patterns of rodents, so the traditional wisdom is to eradicate current activity before proofing. However, in severe cases you may be left with no choice but to seal and mop up any remaining individuals.

Food production areas are also key – pests are not tolerated. Foresight is needed by the pest controller to cover basic food safety requirements such as prevention of pest entry. For example, bristle strips on doors and fly mesh on any windows that open. This all acts to prevent birds, flying insects and rodents. Staff in food environments play an essential role. They should ensure doors are controlled, screen doors are used and pest sightings are reported to management and/or the pest management professional – making it part of the culture on sites.

Pest exclusion methods

Insects can be incredibly challenging to proof out due to their small size. This means other aspects of insect management are paramount, such as hygiene and other integrated options such as electronic fly killers.

The usual suspects always apply such as closing doors and windows. Remember that ventilation, ducting, and building fabric gaps should be sealed, if possible. Remember, a gap for a juvenile rat is 15mm and a gap for a mouse is 5mm. Remember the 'pen test' - if you can put a biro pen through the hole, a mouse can get through.

Doors - Strip or chain curtains can be used across doorways in constant use. There are also advanced techniques such as the use of air pressure, air curtains and airlocks. For the base, there are bristle strips, bump strips, rubber strips, excluder strips. When assessing door proofing, never forget the floor. If the floor is uneven, then no amount of bristle strip is going to even out the floor and more extensive works may be required as well as simple proofing strips. It is prudent to remind the client that plastic strip curtains or chain curtains won't prevent rodents. The best policy is to close the door whenever possible but these strips can be a fair measure in the meantime when doors are open and/or in use.

Windows – the purpose of the window needs to be maintained, so light should still come in and air flow may also be needed. The proofing solution needs to be tailored to both these key factors. Insect-proof screen is usually a very good option. There are many designs that can be fitted to any window and still be appropriate to purpose. Mesh screens should be monitored once installed, ensuring they remain clean and free from debris and in good condition with no rips, damage, or gaps.

Building maintenance – Many smaller insects such as ants can fit through the smallest of gaps. Good general maintenance, as part of a building infrastructure, can go a long way to preventing pest entry in the first instance. Changes, however small to a building, can leave holes behind and that's not ideal as part of IPM. Therefore, a building maintenance program can actively seal holes and gaps that may occur and act to prevent issues.

Proofing products
Weep hole fittings: simple but clever and an easy fix into weep holes. The flex keeps the fitting in place, with no tools necessary. These fill 6cm holes securely and they can also be cut down if necessary.

Rodent sealant products: made from natural ingredients and PS pearls, based on the theory that rodents are averse to the feeling of the PS pearls on their teeth. A ready-to-use paste that deters rodent gnawing, therefore proofing the area.

Rodent barrier: stainless steel microfibers are incorporated in the silicone base, as easy to apply as normal silicone sealant with the added benefit of preventing rodent gnawing. The silicone also acts to encase the steel fibers and prevent any degradation. Great for gaps, holes, cracks.

Mesh vent covers: These come in several colors and stainless steel. A great fix for any vents or air bricks, durable and the ideal proofing solution.

Xcluder rodent mesh: a relative newcomer that has proven to be a great product. It is versatile, can be cut to shape and has a springly flex so can be wedged into holes, gaps, roof tile edges, expansion joints – the list goes on. Durability comes from the polymer coating, so it wont degrade in the environment.

Bristle strip: A classic, still as good as it's ever been. Remember, once cut - crimp the ends to prevent the inner bristle holding rail from coming out. Many a time has this been incorrectly installed and you see bristle fibers all over the floor within a few weeks. Great at deterring rodents. Must be maintained and replaced when worn. It does also come in different angles too, so plenty of scope for applications.

Weldmesh: another classic proofing material. Super strong and durable. Two sizes are available, one for pigeons and one for mice. Cut it and shape it to fit where you need to. Use weldmesh clips and self tappers/ screws to afffix it.

PVC strip curtains: The strips themselves are located on a set of hooks at the top of the door opening, making them easy to remove as necessary. Great for areas of frequent use but where proofing is still required. They also keep heat in and drafts out. But…when installing them the plastic will stretch slightly, it will settle but remember they may need trimming – just don't cut them too short initially.

Expanding foam: Probably one of the most used proofing products out there (usually by non-pest controllers!). It's fine to use but must be cut back once cured and then sealed. Rodents can gnaw through this but some applications alongside wire wool will last a little longer. The huge balls of foam are a big 'no-no'. Mice have been found to nest in the hugely over-expanded foam. Also, wear your gloves whilst using this stuff, 'if you know, you know'. Different varieties are available, including fire rated versions for certain sites.

Wire wool: Again, another classic and still very effective. Wear your gloves when you are cutting or using wire wool, or you may be picking steel fragments out of your fingers for hours afterwards. It doesn't have that much longevity on its own, especially outside. A belt and braces approach is to silicone seal it - a light thin coat over the outer is fine. This aids in preventing corrosion/degradation and helps it stay in place. Another product that rodents don't like on their teeth.

Proofing cone: The basis of this idea goes way back to the very first shipping journeys. Ships would have cones fitted to landing ropes to prevent rats boarding along the lines from the dock. Same theory here, useful to prevent rodent access to buildings as rats are not able to overcome the cone.

Repair Cement Express: Simply, cement in a tube. Great for smaller jobs with long lasting results.

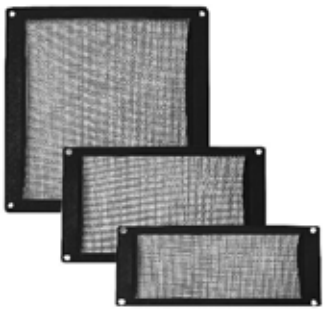
Rat tape: Another newer innovation. The tape is impregnated with a dense steel double mesh, so is anti-gnaw. It is very sticky and can be used in all sorts of applications, over gaps, expansion joints, holes, gaps, cracks.

Rodent Brush: a splendid example of thinking outside the box of bristle strip. This is a 360-degree flexible bristle strip that can be cut, flexed, wound, and removed. Ideal for holes, pipes, around cables, conduits, enclosures, open pipes, drainage gullies, guttering. Especially those that might require maintenance as it can be removed and easily fitted back in.

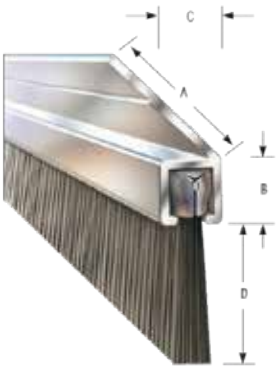


Weep hole fittings

Rodent sealant products


Mesh vent covers:


Xcluder rodent mesh



Bristle strip:


Weldmesh

Wire Wool


PVC strip curtains

Expanding foam


Proofing cone

Repair Express


Rat Tape


Rodent Brush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Advances in formulation technology for cockroach control

Smart manufacturers are working on insecticide formulations to get the best out of existing active ingredients…

While insecticide active ingredients (the bits that do the killing!) are the most crucial part of the product, a high-quality formulation (what form the product takes) is also very important. For example, microemulsion formulations contain surfactants which aid the product in the penetration of insects and therefore rapid control. Suspension concentrates and wettable powders provide residual control on porous surfaces. The water is drawn into the porous surface while insecticide deposits remain on top and available to crawling insects. Some microencapsulated formulations can offer a controlled release of active ingredient that gives fast action as well as long residual activity.

Cockroach bait developments

A further and recent example is certain cockroach baits having 'BlueBead' formulation technology (by Bayer®). This new formulation technology is said baits gives a long-lasting effect in the field, which is always beneficial. Of course, palatability is paramount and the new development includes a feeding stimulant within the formulation. The inclusion of a feeding stimulant means that bait palatability is long-lasting. So-called 'taste enhancers' are particularly attractive to cockroach nymphs.

The biology bit…

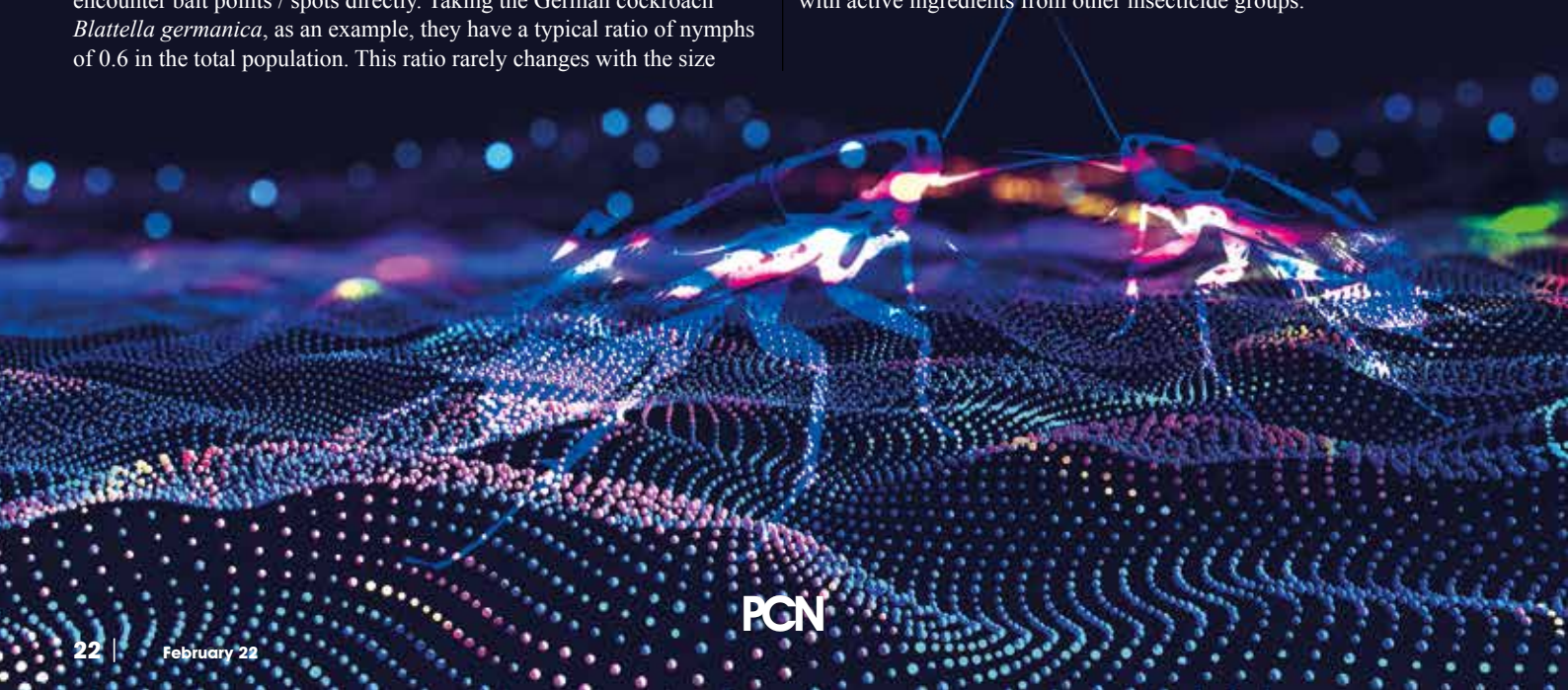
Now, here we need to know some biology to understand the benefit of baits being attractive and palatable to nymphs. Adult cockroaches are foraging actively within their habitat, seeking out food sources. This means their control is not always problematic as they will encounter baits laid according to label directions. However, cockroach nymphs are not as mobile as adults. This means that nymphs are less likely to encounter bait points / spots directly. Taking the German cockroach *Blattella germanica*, as an example, they have a typical ratio of nymphs of 0.6 in the total population. This ratio rarely changes with the size of the population or due to the use of certain cockroach baits. This is where cockroach gel baits with proprietary capsule technology, for encapsulating specific feeding stimulants, come in. Such baits, according to field trial data published at the 7th International Conference on Urban Pests, can modify the nymph ratio favourably in treated populations. A drop in the standard nymph-to-total ratio of 0.6 to 0.14 is evidence of more effective control of cockroach nymphs. The improved elimination of cockroach nymphs is caused by the inclusion of the capsules containing a specific blend of feeding stimulants. It is projected that the alternation of this nymph to total population ratio will reduce the long-term ability of cockroach populations to recover.

What about resistance?

Well, there is more than one type of resistance. Insects can be genetically resistant to certain active ingredients. Some insect species may also show behavioural resistance / aversion to particular bait ingredients (the bait 'matrix') such as sugars. This is known in German cockroach populations in the United States, where aversion to some sugars has been noted which results in certain baits not being consumed. Baits containing complex carbohydrates and phyto-lipids are an option in such cases.

A good formulation needs a good active ingredient though, right?

This is absolutely the case. An example of this is clothianidin, an active ingredient still relatively new to the UK in terms of cockroach baits. Use of alternative active ingredients helps to avoid the build-up of resistance. Furthermore, rotating the use of active ingredients from different insecticide groups (a resistance management strategy) is best practice. With clothianidin being a neonicotinoid, it can be alternated / rotated with active ingredients from other insecticide groups.



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BPCA British Pest Control Association MEMBER

Ghost silverfish

In an article that feels like it would be more relevant at Halloween, we discuss the 'ghost silverfish', *Ctenolepisma calvum*.

Another 2021 article by silverfish experts Kulma et al., documents the first established populations of *Ctenolepisma calvum* in the Czech Republic.

The first question has to be 'why the ghost silverfish?' Well, it's a highly appropriate name as the body surface is uniformly white! The general appearance, when looking at images, does seem quite ghostly. Of course, such general comments are not helpful in terms of formal identification from an entomologist point-of-view. However, they at least arouse suspicion of something different if encountered in the field. The full paper does give information on more detailed identifying characteristics such as styli, bristles, combs.

It should be noted that the ghost silverfish is quite small, with a maximum length of 8mm recorded. This is smaller than typical sizes of the common silverfish *L. saccharina* (10mm) and the grey silverfish *C. longicaudatum* (15mm). Confusingly, juveniles of larger species can of course be a similar size to adult *C. calvum* and coloration isn't fully reliable.

Where have ghost silverfish been found in the Czech Republic (could we expect similar in the UK?)

In Prague, a ghost silverfish was first seen in May 2021 crawling along the wall of a storage room in the basement of a university facility. Two other specimens were caught in an adjacent room used for rearing insects. In the insect rearing facility, the silverfish were harbouring behind towels. Further specimens were captured on insect monitors underneath and on top of insectarium racks.

Ghost silverfish were collected, in April 2021, from a private flat in Prague. An individual was found in the living room on the wall underneath a painting. A further silverfish was taken, while crawling, from a wall behind a shoebox in the hall. Juveniles were seen in the bathroom and toilet. The ghost silverfish activity was considered established as there were individuals at various developmental stages – juveniles, male and female. Regarding the conditions at site, room temperature was 23.3 – 28.2°C with moderate to low humidity.

We may expect the ghost silverfish *Ctenolepisma calvum* to reach the UK, especially as our indoor conditions could be suitable. *C. calvum* has already been reported from the following countries aside from the Czech Republic: Spain, Germany, Switzerland, Austria, Italy, Luxembourg, Croatia, North Macedonia, Sweden, Finland, Russia.

Pest management measures for ghost silverfish

Regarding pest control measures for the ghost silverfish, this is not a well-studied area. A reduction in humidity, which is typically effective for the common silverfish *L. saccharina*, is ineffective against silverfish distributed throughout buildings e.g., the invasive grey silverfish *C. longicaudatum*. It is expected that reducing humidity may be largely ineffective against *C. calvum* as it clearly thrives at room temperature and moderate humidity.

In terms of pest significance, there are no written reports of damage to items by *C. calvum*.

This can actually be the most interesting and challenging aspect of insect control – learning to deal with 'new' / invasive species that aren't well-studied or understood. It certainly keeps us fresh!

ID Corner:
Silverfish

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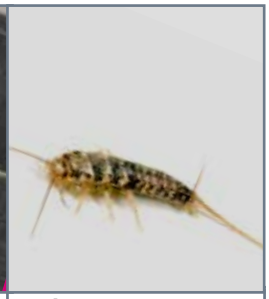
Family: Lepismatidae

- There are three types of Silverfish in the UK. *Ctenolepisma longicaudatum, Lepisma saccharina* and the firebrat *Thermobia domestica.*
- The first record of *Ctenolepisma longicaudatum* in the UK was from 2014 and published in 2016.
- The common silverfish and the firebat are British species.
- The grey silverfish has been recorded recently in the UK.
- Options for control include approved silverfish insecticide baits, dessicant powder and silverfish monitors.
- *C. longicaudatum* appears to survive and cause damage at lowerhumidities than *L. saccharina*.
- Different species of silverfish survive under different humidity's .

	 **Silverfish** *Lepisma saccharina*	 **Grey Silverfish** *Ctenolepisma longicaudatum*	 **Firebrat** *Thermobia domestica*
UK Occurrence	Widespread	London, Reading, initially but now thought to be widespread.	Widespread, uncommon
Body colour	Uniform grey	Uniformly grey	Patterned, yellowish with dark transverse bands
Body Length (adults)	<10mm	<15mm	<11mm
Antennae	Shorter than body	Longer than body	Longer than body
Head	Scales pointing back-wards; few scattered hairs on front margin	Scales pointing forwards; head with numerous setae on front margin	Scales pointing forwards; head with numerous setae on front margin
Tails	Shorter than body	Longer than body	Longer than body

Ghost silverfish *Ctenolepisma calvum*. A species not known in the UK but one that is in Europe. See page 24 for more details. The following images of *C. calvum* are from Miloslav Petrtýl.

Highway code changes affect all road users

Driving is key to the pest management profession; it enables our work to take place. Therefore, the recent changes to the Highway code, that came into force in ***January 2022****, will no doubt affect all of us. We are getting very used to abiding by codes of practice within the industry and this is no different. The Highway Code has had fifty rules added or updated, the majority of which were agreed by a massive 20,000-strong consultation group made up of all different sectors of road users. Let us take a look at the key changes, additions, and updates.*

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Road user hierarchy

A road user hierarchy has been introduced and foundation principles apply. People need to aware of The Highway Code, be considerate to other road users and understand your responsibility for the safety of others. These are common themes in Health and Safety legislation. If we look out for and are considerate of others, we would all have a much safer environment.

Road junctions are key. A pedestrian waiting to cross has priority and all other traffic should give way. If pedestrians have already started to cross, traffic needs to wait for them to finish crossing, giving them right of way.

At crossings (zebra or parallel), the people driving, using a motorcycle, or cycling have to give way to the pedestrian or cyclist on the crossing.

The most at-risk road user is at the top of the risk hierarchy. In most cases this will be pedestrians, followed by horse riders/ horse-drawn vehicles, cyclists, motorists and then other vehicle drivers.

Cyclists

Other areas of the code, that relate to other road users, will also affect drivers. It is recommended guidance that cyclists now keep half a meter from the kerb edge, when on busy roads and with vehicles moving faster than they are. Another change is that cyclists can now ride two abreast and when they are in larger groups or when accompanying children or people with less experience. Other advice also says that cyclists should be aware of vehicles behind them and allow them to overtake, by moving into single file or stopping when safe to do so. To build on cyclist safety, advice for drivers on passing cyclists has been clarified. The new rules stipulate that at least 1.5 meters should be given when overtaking cyclists cycling at speeds of 30 mph or higher and allowing more space at higher speeds.

Cyclists are recommended to use caution as drivers might not be able to see them, particularly in higher risk situations such as junctions, pulling out and passing larger vehicles. Drivers should also be aware that cyclists can now pass slower-moving or stationary traffic/vehicles on the left or the right, a point that was not clear in the last incarnation of the Highway code.

Drivers should also now know that cyclists have priority when traveling straight ahead at junctions unless there is contraindicatory signage (either sign or road markings). Priority is also given to cyclists at roundabouts. As drivers this has not changed - right of way has always been given to the right. Cyclists now have right of way on roundabouts and drivers should not pass cyclists in their lane on an approach to a roundabout either.

Cyclists should also be particularly cautious at traffic lights. There may be cyclist specific signage but they should always approach the traffic lights as if they are a driving a vehicle. They should also make themselves as visible as possible, for example positioning themselves in the middle of the lane they are using (where they feel free to do this). This also acts to avoid them being overtaken as this would be a potentially dangerous scenario, with limited space and visibility.

Passing horses and pedestrians

Stipulations continue for other road users. People riding horses or horse-drawn vehicles at speeds of under 10 mph should be given at least two meters room. The same is recommended for passing pedestrians when walking in the road (e.g., when there is no pavement).

Horse riders or horse drawn vehicles are still allowed to stay left on roundabouts. This has not changed but it is a suitable time to remind us that cyclists may follow slightly different road disciplines at roundabouts. Remember that this also applies if a cyclist is passing a horse, pedestrian, or any other vulnerable road user.

As a driver you may also cross a double-white line if you need to, and it is safe to do so, as long as the cyclist or horse rider is traveling at 10 mph or less.

All swings and roundabouts?

People driving should not attempt to overtake any other road user at a roundabout, especially when they are using the left lane (as they are permitted) but can expect cyclists and allow cyclists to move across their path as they use the roundabout.

A new technique also mentioned in the code, coined the 'Dutch Reach' encourages vehicle users to, upon leaving their vehicle (if driver side, right-hand drive vehicle), use their left hand to open the door whilst looking over your right shoulder. This Enables a check for anything approaching from behind, designed to prevent injury to cyclists or pedestrians. Similarly, for passengers to do the same but opposite and for right hand drive vehicles. The idea is that it forces you to turn your head to look.

Electric vehicle additions

With the changing scope and advancing technology on the road, guidance has been extended to electric vehicle charging points. General advice is given - park close to the charger point to avoid a trip hazard due to trailing cables, display a warning sign if you can and return cables and connecters neatly, minimising obstacles and possible obstructions to other road users.

In summary

- Responsible behavior always has been and still is key
- Pedestrians have right of way
- Cyclists, horse riders, horse-drawn vehicles may do different things at roundabouts compared to other drivers
- Slow down, better to arrive alive than not at all
- Wait behind road users and do not overtake if it is not safe to do so or not possible to meet the clearance advice
- Road safety is paramount in any business, clear duties are applied under the Health and Safety at Work Act and Management of Health and Safety at Work Regulations for occupational road users, which pest management professionals will fall under

Full references can be obtained from technical@pestcontrolnews.com.

Heat treatment – getting insects hot under the collar!

Pest Control News speaks to Dave Hammond of Thermokil, regarding the non-chemical approach of heat treatment for insect control

A bit of history

When I started my career in pest control, forty years ago, heat treatment for insect control was being used to treat whole flour mills as an alternative to fumigation with methyl bromide but didn't have a great reputation for cost effectiveness and didn't really take off as a mainstream treatment.

Methyl bromide was to be identified as an ozone depleting gas and is now banned over much of the world (under the Montreal protocol on ozone depleting gases). The fumigation industry initially presented a lot of opposition to its ban. The claims were, amongst many other things, that we would all starve as the food chain became disrupted and that heat simply didn't work and wasn't a viable alternative.

I am pleased to say, 20 years on, not only have we shown that heat does work very well if used correctly but that the food supply chain has not dried up and methyl bromide usage is now much reduced. I'm sure there are also many benefits in our battle against climate change. I am also very pleased to report that the heat treatment market is significantly larger than the fumigation market ever was. We can use heat safely in so many more situations than we could ever have used methyl bromide, with much reduced health and safety and environmental risks.

How does it work?

I was recently asked to do a presentation on heat treatment for the British Pest Control Association (BPCA). I decided that my theme would be to explain the differences between heat treatment for insect control and fumigation with toxic gas. In some ways both are capable of doing the same job in that they are the only two practicable methods of killing insect eggs, larvae (or nymphs), and pupae in hidden crevices or other areas inaccessible to conventional contact insecticides, but there the similarities end.

Heat treatment requires the movement of hot air by convection to heat up the target area, e.g., metal machinery or wooden structures, and then the heat moves by conduction to kill the target insects. If you cannot get the air movement e.g., in a stack of grain, you cannot have the convection side. If you have a lot of trapped air, e.g., in a thick sofa you will struggle with the conduction element. In fumigation, the toxic gas moves within structures by diffusion of molecules of gas. However, this diffusion is completely blocked by solid barriers, whereas heat energy will pass through solid barriers by conduction.

Imagine a pallet load of tightly packed small tins of nuts. Assuming a lab had checked the type of nut could be heat treated, you could theoretically heat up the tins. Each tin would act as its own little oven and cook the contents of the tins to kill any insect eggs within. If you tried to fumigate the same pallet, the gas would only be able to penetrate the free space in between the tins and not the contents.

Surveying

Surveying heat and fumigation jobs is totally different. To estimate how much gas you need for a fumigation you'll measure the volume to be treated, assess the concentration of gas required and by doing the maths, come up with a quantity of gas to be applied. For heat treatment, the amount of energy required is a product of the mass of what you are heating up x the specific heat capacity of the material you are heating up x the delta T (change in temperature required).

Training

Understanding the difference in physics between heat treatment and fumigation is crucial before you even begin to work in this field. In the UK alone, over the last 20 years, there have been millions of pounds worth of damage caused by people who have tried to get into heat treatment without bothering to understand the physics first. At Thermokil we won't let anyone loose on one of our heat treatment kits without a minimum of three days training. At least half the training time is very necessary classroom theory – consequently, to date we've never had to trouble our insurers with any damage claims (touch wood!)

In Europe and the USA, there have been numerous cases of houses being burned down as some budding entrepreneurs decide to pop down the nearest hire shop, rent a propane gas heater and advertise themselves as offering heat treatment against bedbugs. There have even been some examples of people trying this in the UK, though fortunately I think this is on the wane – please don't even think about it.

Where to use heat treatments

There are four main areas in which we are likely to need to kill hidden young insect stages. These are: food production and storage machinery (and in cigarette machines), in commodities, in hotels/residential situations against bedbugs or fleas and in timber (either against timber pests in structures or antiques or for phytosanitary purposes e.g., ISPM15 or for brown marmorated stink bug (BMSB). That is not to say there aren't a host of other areas where heat has been very useful, more of which later.

If I'm trying to introduce somebody new to heat, I generally start with what you cannot currently easily do with it. Fumigation still comes up top for commodities, either like loose grain in flat stores, or stored in silos, or in full transport containers. Here phosphine, sulphuryl fluoride or more recently hydrogen cyanide can still be used by licenced fumigators. However, for grain handling machinery, empty silos, tankers and trucks, heat is quick and easy if you know what you are doing.

Types of heat treatment

There are two main types of heat treatment equipment / processes on the market. Hydronic radiator systems are a modern manifestation of the old US style boiler and steam radiator systems. With this you have a heat generating source parked outside the heat treatment area, with long hoses transferring the heat energy in glycol to radiators placed within the building. As these radiators are inside, and recirculate the air, they are quite efficient at heating up buildings. Overzealous use has resulted in significant damage, particularly where operators have failed to understand the role of water movement in the process or how the structure of the building will take being heated up.

The Thermokil process involves the use of convected air into a defined heat treatment area. This is directionally controlled and managed to target the heat where it is needed and away from where it might cause damage. To achieve this, large numbers of Thermolog temperature sensors are used by skilled operators. Use of sensors helps to understand the air movement and the rates at which target areas are heating up. Finally, the safety sensors are placed in those areas agreed with the client that might be sensitive to heat. This is so the operator can protect them against damage.

Considerations

Because heat treatment is so complicated, and capital set up costs can be comparatively high in terms of equipment and training, the UK and Spanish arms of Thermokil sub-contract to many different pest control companies. This works very well as the technicians are able to offer masses of experience, which maximises the chances of successful treatments whilst minimising the chances of damage. Pest control companies, from one-man-bands to the very largest companies, can offer quality heat treatment services under their own brand without going through the setup costs. Training is offered, free to surveyors, so they know what can and cannot be treated. Also, remote viewing via video call can allow many surveys to be done over the phone.

For more complicated food jobs or timber structures, Thermokil staff tend to go with the pest control contractor to survey the job. Unlike fumigation, heat treatment is not a panacea 'kill-all' solution. Heat treatment is used alongside conventional pest control measures which may still have to be carried out by the contractor. These measures are alongside and in conjunction with the heat treatment element. Heat treatment, in reality, is just there to kill the hidden eggs, larvae and pupae which cannot be reached by cleaning and spraying.

Whilst these days I don't get to spend much time in the field doing jobs, over the years I have done quite a lot of supermarket in-store bakery treatments for the various high street brands. Here the in-store bakeries are shut down, the machinery completely taken apart and deep cleaned, then put back together absolutely spotless for us to heat treat. In almost every case we still find one or two tiny moth or beetle larvae flushed out and killed during the treatment. Of course, hidden eggs and pupae can't move but they will be there, and as they cannot avoid the heat, they will be killed. Funnily enough we tend not to have to do the same store again for a long time as the only way it will become re-infested is if it imports infested materials e.g., flour, nuts etc.

David Hammond BSc(Hons) is the founder of the Thermokil group of companies, pioneer of modern heat treatment technologies, author of the book Heat treatment for Insect Control – Developments and Applications, Woodhead publishing series in food science technology and nutrition, and a passionate environmental campaigner.

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Case Study: Using Selontra® to rid a renovation project of rodents

When pest control specialists, Amicus Environmental Services, received a call to attend a property with a long-term, severe rodent infestation, the team seized the opportunity to trial the recently released rodent bait Selontra®, putting its claims of high palatability and fast results to the test. In just ten days, Selontra® had effectively dealt with 100% of the rodents, in what the PCO's on site described as the worst rodent infestation they had ever seen.

The Challenge

Upon arrival at the property, it quickly became apparent that the house in question had been left empty for a number of years and had recently been purchased by new owners. It wasn't until they began renovation works that they discovered how severe the rodent infestation they were faced with was, with all construction work having to be suspended until the rat activity was brought under control.

John Tomes, Director at Amicus Environmental Services, commented: "After carrying out an initial site survey, the scale and extent of the infestation within the property became obvious. It was evident that the new homeowners couldn't commence with renovating the house until we had dealt with the serious rat issue that they were faced with.

"Having been unoccupied for over three years, the rodents had plenty of time and opportunity to cause significant damage to all areas of the house. Essentially, the rats had moved into the property with complete free rein over the space. We had never seen such a severe infestation before, nor such high levels of rodent activity."

Following a thorough inspection of the house, the team found extensive damage to all areas, including subfloor cavities, internal walls, and the loft space. The entire property was peppered with rat holes, gnawing, smear marks and a huge number of droppings, while rats openly moved in their dozens throughout the house during daylight hours.

The Result

Immediate action was required to bring the overwhelming rodent infestation under control. The team used Selontra® to lay 30 control points throughout the house, each with seven blocks, as per the maximum allowable baiting quantity. Control points were open but secured with a wire noose and zip ties.

That afternoon, the team received a call from the homeowners that, within just 12 hours of laying the control points, the rats had consumed all of the bait laid earlier in the day.

All control points were then fully re-baited that evening, and the team revisited the following morning to again see that all bait was gone, having been consumed by the rats.

Over a nine-day period, little over 15kg of Selontra® was laid throughout the house, and by day 10 no further rodent activity was observed.

John said: "It was amazing – on multiple occasions we saw rats consuming Selontra® within five minutes of control points being set, while we were still laying bait throughout the house!

"We were able to achieve complete control within 10 days, proving all performance claims that Selontra® is both highly palatable and highly effective. We were also able to ensure that there was no risk of secondary poisoning, while reducing environmental exposure throughout treatment.

"From a financial perspective, we have saved significantly. The speed with which we were able to complete the job allowed us to invoice the client swiftly, increase our quotations based on the high effectiveness of the product, and enable us to move on to the next site faster than we would have been able to previously. Going forward, based upon site assessment, Selontra® rodent bait will be my first choice."

About Selontra

- Rodent-free is possible in as few as seven days
- Saves treatment times and improves productivity
- Stops the waste of resources
- Balancing performance and environmental impact
- Breaks the cycle of resistance

Selontra® is a revolutionary rodenticide bait, controlling infestations in rural and urban settings in as few as seven days.

Its high performance, non-anticoagulant formulation controls up to 100% of target rodents, including resistant rats and mice, breaking the cycle of resistance.

Selontra®'s unique active ingredient, cholecalciferol, is neither persistent in the environment nor bio-accumulative.

Importantly, it's four times more palatable than most rodenticides, making it a powerful solution for controlling infestations even when alternative attractive food sources are readily available.

Selontra® is stable and durable enough to withstand both cold climates and extreme heat, whatever the weather.

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A New Approach to Rodent Training - Challenging Rodent Control Convention

There can be little doubt that for most pest control businesses, rodent control makes up the majority of day-to-day activities, and yet somehow, we so often manage to get it wrong. This coupled with the rise in rodenticide residues found in barn owls, highlighted in the most recent CRRU press release, indicates that we must change the way we work with anticoagulants.

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So how can we improve things?

Firstly, we need to question the way we approach rodent control and potentially reevaluate long held views. Ask yourself honestly, how often do you bait with people in mind rather than for rodents? Why do we ask this? We only need to look at most pest control contract set ups to see this. Bait stations positioned around wall floor junctions of a warehouse adjacent to a cavity wall; bait stations positioned adjacent to fire exit or shutter doors. The customer or auditor may well be happy and think the site is protected, but does this mean that the site is protected? We know that rodents prefer to live in out of the way locations, cavity walls, sub-floor voids, above ceilings, drainage systems etc, the list goes on, yet still we bait the way we always have.

Add to this the number of sites that have long standing rodent issues, which fail to be addressed. Factor in the reluctance of pest control businesses to communicate with each other where problems exist in adjacent buildings and what do we have…proliferation of rodent problems that could be avoided.

Admittedly, we are unlikely ever to win the battle, if we want to consider victory as total eradication of rodents and why would we want that as it could mean we would put ourselves out of work?

However, rodent problems can damage the reputation of your business and cost you financially in increased follow up visits and prep etc. There are many variables to factor in when we consider the adaptability of rodents. We only need to look at the perceived rise in behavioural resistance and cereal intolerance of house mice; the apparent rise in field mice being found in buildings; genetic resistance being now widely reported; the reduction of proactive sewer baiting by water utility companies etc.

We also need to consider the reduction in tools at our disposal. Liquid concentrates have gone, mouse contact tubes gone, contact dusts gone. Some anticoagulants disappearing; rodent glue boards likely to become extremely difficult to use or justify in the next couple of years. Therefore, we need to change our approach, think, and act differently.

As we pointed out in an article around three years ago, we want to 'raise the bar' in the pest control sector. We see the way to achieve this is through increased awareness and an ongoing commitment to training. We have therefore developed a training course that is designed to challenge long held conventions surrounding rodent control. We are currently running this around the UK and Ireland and are putting on new dates almost daily such has been the demand and feedback of those attending already run courses.

In brief this full day course encompasses the following:

Practical exercises depicting rodent issues

- Resistance both genetic and behavioural
- Drainage and the link to rat activity
- Understanding rodent behaviour and what traits enable us to exploit it for control
- Survey techniques
- Tools for identifying activity and trends
- Understanding how to control and what to do when it all goes wrong

If this sounds of interest to you, then please feel free to contact our offices on 01773 717716, who will be more than happy discuss the next dates and locations for this course. We are also happy to visit your offices and deliver this as a bespoke course for you and your staff.

BPCA take on lobbying

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It's probably not a member benefit you think about every day, but it is one of the most crucial tasks BPCA membership fees help fund. BPCA Chief Exec, Ian Andrew talks all thing public affairs.

Engaging with politicians might not sound like a great way to spend your day, but as a trade association, that is exactly what we were designed to do. After all, we're the voice of our members.

Governments appreciate trade associations because we're the single voice of the hundreds of members we represent.

BPCA represents the sector in all four Parliaments and Assemblies of the UK, plus their relevant Civil Service departments eg Defra, Daera and their Non-Departmental Public Bodies (NDPB) such as Natural England, Natural Resources Wales, NatureScot and HSE.

BPCA monitors political activity across the UK. We answer consultations and direct questions from politicians and departments to help dispel any misconceptions and ensure public health is well represented. We also meet with politicians in person, host pest-related events and generally build deep connections with the sector.

What BPCA's done so far

Lobbying has never been so high on BPCA's agenda - and rightfully so, given how much pest management has been in the spotlight for the last few years. Recently we've:

- Campaigned for the retention of glue boards for professionals
- Campaigned for Key worker status during the pandemic
- Lobbied for workable bird licences across all four nations
- Held parliamentary events at Holyrood and Westminster
- Met the Ministers for Housing, Small Business, the Home Office, Pacific and the Environment at the Foreign, Commonwealth and Development Office
- Met with MPs and members of the House of Lords
- Sent hundreds of introductory letters to MPs, MSPs, MLAs, MSs and Ministers in Westminster, Holyrood, Stormont and Cardiff
- Replied to several national and European consultations on the behalf of members
- Met with senior civil servants in all four nations and have productive ongoing relationships with senior leaders in the NDPBs
- Sat on the Cleaning and Hygiene All-Party Parliamentary Group in Westminster and the Cross-Party Group on Animal Welfare in Scotland.

Governments control much of what we do and how we do it. While many of the laws we operate under are pretty old, the loud and well-supported animal welfare lobby means that we have to protect our toolkit so that we can, in turn, protect public health. New laws are introduced, old ones are amended.

We have to keep on top of what's happening and make the sector's voice heard.

LEARN MORE OR GET INVOLVED?

Interested in engaging with your local politicians or just want to learn more about BPCA's work in this area? Members can contact us to find out more and join our various committees that help dictate our public affairs agenda.

hello@bpca.org.uk

BPCA 80th anniversary celebrations in Westminster

On 16 March, BPCA held a celebration in the Churchill Room of the House of Commons, hosted by Nigel Mills MP.

BPCA members were invited by ballot and some special guests from associated industries. Several MPs and the Minister for Small Business, Paul Scully, heard short speeches.

BPCA President Philip Halpin gave us a whistlestop tour of the 80 years BPCA has helped protect public health. He said: "There will be times when some misunderstand our purpose or don't want to listen to us. But if our 80-year history teaches us anything, it is this: BPCA members are the voice of professional pest control. Together we'll speak against the destruction, misery and disease pests cause."

BPCA Chief Exec Ian Andrew talked of the challenges we face today, saying: "I have one request of our elected officials that sit and debate our profession in this palace: by all means, hold us to account for any animal welfare concerns, but don't let this get in the way of us protecting your constituents and our clients. Remember, every method of control - however harmful it may be to the pests - is only used to protect public health."

Gemma Sutherland, a graduate service technician at BPCA member company Pest Solutions, spoke about her hopes for the future of pest management. She said: "I've learned that this job requires a great deal of integrity and respect when dealing with animals and customers. It is not a job for everyone, nor is it a job for a particular sex.

"I have confidence that as an industry we will continue to encourage and support diversity, shift public preconceptions and, in the near future, pest control will be a comfortable career choice for many young people and women like myself."

pestex.org

0113 245 0845 giles.ward@milnerslaw.com or uk.linkedin.com/pub/giles-ward/31/187/6b3 @MilnersGiles

Beware of Zombie firms

One of the temporary pieces of legislation to be born out of the COVID-19 outbreak was the Corporate Insolvency and Governance Act 2020 (CIGA). The aim of this act was to relieve businesses from financial turmoil during the economic stand still. CIGA came in to force on the 26th June 2020. A key feature of this legislation was to restrict debt-related winding-up petitions from being presented. This includes debts owed to suppliers, contractors or even rent arrears which many business struggled with during the pandemic.

These restrictions remained in place until the 30th September 2021 however, as we were still in the eye of the storm, further temporary legislation under CIGA was introduced and set to apply until the 31st March 2022. These restrictions now allowed winding-up petitions to be presented but subject to strict conditions including:-

Not being able to present in respect of commercial property rent arrears that were due to the financial effect of COVID-19;

Creditors had to serve a written notice to the debtor seeking to agree repayment of the debt e.g. payment plans, and allowing them 21 days to make such a proposal; and Debts less than £10,000 could not be subject to a winding-up petition.

Although for the past year creditors have had the ability to present winding-up petitions, these strict conditions have helped countless businesses stay afloat and manage their debts as life has been slowly breathed back into the economy.

Unfortunately for business's still recovering, the CIGA legislation came to an end on the 1st April 2022 with no extensions planned. Consequently, any businesses with outstanding debts over £750 can now have winding-up petitions made against them, with no strict conditions attached.

On the flip side, this news is welcomed with open arms by creditors who have outstanding debts owed to them, some dating back to 2020 and will clear out what are termed in the business as " zombie firms " – firms barely alive but …not dead. They will be collating their claims to try and retrieve these long outstanding debts, and indeed keep their own businesses afloat. As the economy starts to get back on its legs, it will be a bittersweet as we will undoubtedly see a sharp increase of compulsory liquidations in the coming months.

If your company has debts owed to them or a winding-up petition has been served on you, Milners have over 120 years experience in dealing with legal issues for business and individuals and can help you along the way. Please contact Giles Ward senior partner on 0113 245 0852 or 07789 401 411 and either he or one of his colleagues will be happy to assist.

Your guide to the pest control

2022 TRAINING DATES

Killgerm® TRAINING

Killgerm Training run courses nationwide offering different types of courses for different levels of experience and knowledge. Details of all course dates and locations are available online at: **www.killgerm.com/pest-control-training-calendar**. There is also a full list in the Killgerm catalogue on pages 235-237.
For further information or to book your place on a course call: **01924 268445** or email **training@killgerm.com**.

NORTHERN COURSES 2022

Date	Venue	Cost plus VAT
BASIC PRINCIPLES OF PEST CONTROL		
Killgerm Principles of Rodent Control		
7th June 2022	Ossett	* £115/£145
19th July 2022	Ossett	* £115/£145
16th August 2022	Ossett	* £115/£145
6th Sept 2022	Ossett	* £115/£145
4th Oct 2022	Ossett	* £115/£145
8th Nov 2022	Ossett	* £115/£145
6th Dec 2022	Ossett	* £115/£145
Killgerm Principles of Insect Control		
7th & 8th Sept 2022	Ossett	* £160/£190
9th & 10th Nov 2022	Ossett	* £160/£190

SOUTHERN COURSES 2022

Date	Venue	Cost plus VAT
MIDLANDS		
BASIC PRINCIPLES OF PEST CONTROL		
Killgerm Principles of Rodent Control		
22nd Nov 2022	Burton on Trent	* £115/£145
Killgerm Principles of Insect Control		
23rd & 24th Nov 2022	Burton on Trent	* £160/£190

SOUTHERN COURSES 2022

Date	Venue	Cost plus VAT
EAST ANGLIA		
BASIC PRINCIPLES OF PEST CONTROL		
Killgerm Principles of Rodent Control		
12th Sept 2022	Norwich	* £115/£145
Killgerm Principles of Insect Control		
13th & 14th Sept 2022	Norwich	* £160/£190
BRISTOL		
BASIC PRINCIPLES OF PEST CONTROL		
Killgerm Principles of Rodent Control		
28th Nov 2022	Bristol	* £115/£145
Killgerm Principles of Insect Control		
29th & 30th Nov 2022	Bristol	* £160/£190
SURREY		
BASIC PRINCIPLES OF PEST CONTROL		
Killgerm Principles of Rodent Control		
18th July 2022	Lingfield	* £115/£145
19th Sept 2022	Lingfield	* £115/£145
Killgerm Principles of Insect Control		
19th & 20th July 2022	Lingfield	* £160/£190
20th & 21st Sept 2022	Lingfield	* £160/£190

SCOTTISH COURSES 2022

Date	Venue	Cost plus VAT
BASIC PRINCIPLES OF PEST CONTROL		
Killgerm Principles of Rodent Control		
22nd Nov 2022	Huntingtower Hotel, Perth	* £115/£145
BASIC PRINCIPLES OF INSECT CONTROL		
Killgerm Principles of Insect Control		
23rd & 24th Nov 2022	Perth	* £160/£190

Note this lists only the Basic Principles of Pest Control courses. Please visit our website for the full range of training courses **https://www.killgerm.com/technical/**

Some courses remain available online. https://training.killgerm.com/

Killgerm® Breakfast MEETINGS

Check online at **www.killgerm.com** for dates and to book

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