

BBKA NEWS

The newsletter of The British Beekeepers' Association

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Incorporating **BBJ** The British Bee Journal, Volume 6



ADVICE

Selling and Brexit

Find out how the procedures for selling hive product cosmetics will change after Brexit.

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FEATURE

Painting Bees

Some 50,000 bees are being painted in locations across the globe, including the UK.

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PRACTICAL ADVICE

Hive Stands

How to make a stable, higher-level hive stand that will help to protect your back during inspections.

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Trustees' Editorial

By Pam Hunter, Trustee

I have quite a varied time dealing with a number of enquiries (mostly via our Press Officer, Diane Roberts) about honey and also about the number of bee hives in cities. There has been a lot of interest lately in the health benefits of honey. The BBKA was approached by a journalist who was writing an article on honey for a magazine on men's health. I had quite a long talk to her explaining how good honey is for sore throats and that our own honey is excellent for that; it is not necessary to buy expensive Manuka honey! We were also approached for a response to a report from Kew, which claimed that there are too many honey bee hives in London and that this can have an adverse effect on various other pollinators. I was interviewed for a couple of radio programmes on this. I have to agree that in some parts of London and perhaps other cities, large numbers of hives is likely to be detrimental; something that needs more research. Forage is at a premium and it is difficult to increase it substantially in heavily urbanised areas. Interestingly, our researchers at the University of Northumbria have been investigating the use of large planters in built-up areas of Newcastle. They monitored the visitations by a range of pollinators throughout last summer with promising results. Their results can be found in *The BBJ* in the centre-fold of this issue.



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Thank you for all your continued support during COVID-19. There are a lot of things that are constantly changing and we're all learning how to live our daily lives differently. We appreciate your co-operation during this strange and weird time and would just like to wish everyone a Happy Christmas and a very Prosperous 2021!

MERRY CHRISTMAS!

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Cover: Part of a mural painted on the walls of Pipers Corner School, by Matt Willey (see page 410). Image courtesy of The Good of the Hive and photo taken by Anna Walker.

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Letter from the Chair

This year has certainly been different with floods, droughts and with the rules and guidance around COVID-19 governing our everyday lives. At least, as beekeepers, we have been able to visit our bees and ensure they stay healthy.

I have been inundated with wasps in my garden apiary this season. I was encouraged to see the bees standing firm in their entrance denying them access, but it was a long battle for them this year. Although there have been numerous potential sightings of Asian hornet, we have, thankfully, only had one confirmed nest this year. I would like to thank our Asian Hornet Team members for being willing to check up on all the potential sightings and suspect nests. Preparations for the virtual ADM are well underway and you will now have received the propositions to discuss. I hope all your Association ADM delegates are confident in using the technology and are reassured about the proposed voting system. Martin Smith has worked hard to produce a more equitable system. It will be a new experience for us all. Holding the ADM virtually and using technology that may be new to some is challenging, but I hope you have found the practice sessions helpful.

Can you spare a cup of coffee? Please remember when you vote, that it is equivalent to what the trustees are asking for in seeking an increase in capitation by £2. We always need to consider the demands of a future budget beyond the coming year and it is possible that next year the continuation of the COVID situation will have a negative impact.

We do want courses to continue, but it does mean rethinking numbers and subsidising the costs. We are planning practical and theory courses at Stoneleigh next year, but we will always have to work within Government guidelines.

Speaking to one of the Seasonal Bee Inspectors, it appears that EFB has been a concern in several areas this year. Some viruses have also been a problem, particularly Chronic Bee Paralysis Virus. Thankfully, researchers are actively investigating such problems that threaten our colonies and, hopefully, some of the Zoom-style lectures and recent articles in *BBKA News* are a reminder of how to recognise these problems.

Leigh Sidaway has done an amazing job in managing the demands arising from the constantly changing COVID-19 guidelines, keeping the staff protected and managing the workload of a busy office. Thank you to all the staff who have worked hard to keep the BBKA office running smoothly.

The building alterations and garden development are progressing well and we look forward to showing them to you when you visit Stoneleigh. The work does not appear to have upset the bees. They have enjoyed a very peaceful year and thanks to our apiary managers, have remained healthy and produced a good honey crop. I hope you enjoyed the National Honey Show. It seems strange not to be able to meet with people. Zoom-style meetings are good but that quick chat between lectures 'enroute' to the trade stalls is sadly missing. Hopefully, in time, we will be able to enjoy more normality. Finally, I want to thank Sharon Blake and the *BBKA News* team for the excellent work they have done during 2020 in producing such an informative magazine. And I wish you all the best for the festive season and enjoyable beekeeping in 2021.

**Anne Rowberry, Master Beekeeper,
Chair of the BBKA**



Pastures Yellow

Photo: Ian Campbell

Once commonplace, bright yellow fields of oilseed rape (OSR) are a 'double-edged crop' for some beekeepers. Often valuable early spring forage for bees, OSR produces a rapidly granulating pale set honey that requires careful timing to extract and which does not meet every customer's expectations. The other aspect of OSR is the controversial crop protection products that have been used to defend the crop from destructive cabbage stem flea beetle (CSFB). In 2013 the EU restricted three neonicotinoids used as seed dressings on mass-flowering crops following concerns over impacts on pollinators. In 2018 a total outdoor ban was imposed. The debate over alternative pesticides used continues. Oilseed rape is used by farmers as a break crop to achieve rotation between cereal crop plantings. UK OSR area grew steadily from the 1970s peaking at nearly 800,000 ha in 2012 halving to less than 390,000 ha in 2020. In a difficult season for many farmers impacted by extreme weather, the 2020 crop map from the Centre for Ecology and Hydrology revealed the OSR area down by an average 38% compared with the previous five years. Average yields per hectare have also dropped by approximately 20% to below 3t/ha. Predictions for 2021 show further falls in area as farmers turn away from the crop as profits reduce. This fall is in part due to what farmers see as unfair competition from other European countries who flout the neonicotinoid ban by issuing dubious repeated emergency authorisations despite EU attempts to clamp down.

Ian Campbell, News Editor, *BBKA News*

BBKA 2021 Spring Convention December Update

The Spring Convention Committee continues to keep options open regarding the format of the Convention: 16–18 April 2021. However, with current trends and developments around Coronavirus, it looks increasingly likely that the event will be virtual. The Committee is now laying plans to facilitate such an on-line event. The final decision will be made soon.

Whether the format is physical or virtual, there certainly will be lectures from leading speakers and workshops presented by experts. There will be the all-important Trade Show for both commercial traders and not-for-profit exhibitors, and the intention is for as much social interaction as arrangements permit. Indeed, the social aspects of the annual BBKA Spring Conventions are a significant attraction for many participants.

We are looking at ways of supporting as much beekeeper interaction as possible in the event that the 2021 Convention is virtual. To this end, you may have seen a recent questionnaire seeking BBKA members' views about their participation. Many thanks to all who let us know their thoughts and preferences. If you missed the questionnaire and have ideas you would like to share, my email address is below. Please see www.bbka.org.uk for updates and keep safe over the festive season.

As usual your thoughts are welcome.

Joyce Nisbet, BBKA Trustee and
Spring Convention Committee Chair
email: joyce.nisbet@bbka.org.uk



News in Brief



Ian Campbell, News Editor

Premium Honey

Authors, from the Agricultural Institute of Slovenia, of a new study on honey fraud detection have suggested it is the sixth most commonly adulterated food worldwide. They explain that honey from different bee species have different 'values,' some with a significant premium. Their research, published in the journal *Food Control*, has developed a simple DNA-based technique for differentiating honey produced by three species of the genus *Apis* (*A. mellifera*, *A. cerana* and *A. dorsata*) using species-specific 'markers' within the 'Ant' gene in DNA taken from honey samples. The authors hope, that with further refinement, the technique will help to identify adulterated honey worldwide and believe it may be adapted to test royal jelly.



Photo: Ambir Tolang, Pixabay

Healthy Bee Plan 2030

Defra, the Welsh Government and the National Bee Unit have worked with stakeholders to produce a review of progress made under the original Healthy Bees Plan, first introduced in 2009. Following this review, the new plan sets out the following four key outcomes to help protect honey bees over the next ten years. First, effective biosecurity and good standards of husbandry, to minimise pest and disease risks and so improve the sustainability of honey bee populations. Second, enhanced skills and production capability/capacity of beekeepers and bee farmers. Third, sound science and evidence underpinning the actions taken to support bee health. Fourth, increased opportunities for knowledge exchange and partnership working on honey bee health and wider pollinator needs.

'Insult to Beekeeping'

The National Union of French Beekeeping (UNAF), has reacted angrily to the decision by the French National Assembly and the Senate to authorise emergency use of neonicotinoids on sugar beet until mid 2023. In a statement the UNAF said: 'For 25 years, beekeepers have been the first witnesses to the ecological disaster caused by neonicotinoids. For 25 years, they have waged a relentless fight against these products, by all possible legal means ... Today, by their vote, the deputies have decided to reverse one of the only real environmental advances of the last ten years.' Paradoxically, the decision came just before a judgement by the European Court of Justice confirming the legality of the earlier contested French decision to ban five neonicotinoids. In the UK, the British Beet Research Organisation stated in a recent update that: 'The UK sugar beet sector is currently experiencing its worst virus yellows epidemic since the mid 1970s. The withdrawal of the neonicotinoid seed treatments on sugar beet has left the UK crop exposed to the aphid-borne infection and reliant on foliar applied insecticides.'

Some Like it Hot

An ongoing project at the University of Nottingham is developing an innovative way of tackling varroa. The £450,000 project looks beyond conventional biotechnical and chemical methods with a treatment based on heat. Their patented product, to be known as BeeSave, uses a special phase change material pack as a heat source which can be triggered once placed within the hive. Research shows that varroa mites can be killed during all development stages if they are exposed to temperatures in the range 40°C to 47°C for around two and a half hours. These temperatures are reported to be safely tolerated by brood and adult honey bees, and do not damage the honeycomb. The system is designed to be compact, simple to use, robust, low cost and not to require mains electricity.

Antiviral Bee Products

The emergence of SARS-CoV-2 and COVID-19 has become the subject of a study linked to honey bee hive products by the Federal University of Minas Gerais in Brazil. The study, published in the journal *Phytotherapy Research*, states that the antiviral effect and the ability to stimulate the immune system from using bee products stand out as potentially promising in the therapy of severe viral respiratory infections. In the study they present possibilities of apitherapy in combating COVID-19 and highlight the importance of bee products as a promising source of therapeutic and prophylactic strategies. However, the authors caution that large randomized and controlled clinical trials should be conducted to assess the real benefits of apitherapy. doi.org/10.1002/ptr.6872.

COLOSS Conference

This year's virtual conference of the honey bee research association, COLOSS, had a record number of attendees from over forty countries with the first day of proceedings open to public online viewing [<https://bit.ly/2FKAi1w>]. Despite COVID-19 restrictions, the Executive Committee was determined to keep the spirit and activities of COLOSS alive. During the event, detailed updates were given on the COLOSS Core Projects including the *BEEBOOK* and colony loss monitoring, as well as from specialist COLOSS Task Forces.

Asian Giant Hornet Nest

Following weeks of trapping and searching, Washington State Department of Agriculture (WSDA) entomologists have located the US's first ever Asian giant hornet nest in the cavity of a tree on a property in Blaine, Washington State. The find was made using radio tracking technology and the use of traps to capture specimens to follow back to their nests. The nest was subsequently tackled in an early morning operation by a heavily protected team and samples vacuumed out and taken for analysis. The tree has since been felled to give full access to the nest and, during the process, nearly two hundred virgin queens including pupae were discovered.



Photo: Washington State Department of Agriculture

News in Brief

Gut Feeling

New research from Washington University in St. Louis shows that honey bees rely on chemical cues related to their shared gut microbial communities, or microbiome, instead of genetic relatedness, to identify members of their colony. The study, published in the journal *Scientific Advances*, suggests that honey bees recognise and respond to chemical signals from other bees that they detect from



Photo: Ian Campbell

compounds known as cuticular hydrocarbons (CHCs). This study determined that a bee's particular CHC profile is dependent on its microbiome, the bacteria that make up its gut microbial community, and is not something innate or genetic to the bee alone. Lead author, Cassondra L. Vernier, said: "The importance of this paper is that it's one of the first papers that

actually shows that the microbiome is involved in the basic social biology of honey bees and not just affecting their health ... The microbiome is involved in how the colony as a whole functions, and how they are able to maintain nest defences, rather than just immune defence within an individual." The team showed previously that bees develop different scent profiles as they age, meaning that only when a bee is old enough to interact with others outside of the hive does it become recognisable to others including gatekeeper bees. DOI:10.1126/sciadv.abd3431

Sweet Alternative

New analysis of previous studies on the effects of honey on upper respiratory tract infections as an alternative to other treatments and inappropriate antibiotic use, has found that there is emerging evidence of its effectiveness. The study, published in the *British Medical Journal*, suggest that both cough frequency and severity is reduced by honey without the risks of antimicrobial resistance.

Virtual NHS

The eighty-ninth National Honey Show took place in late October as a virtual event due to COVID 19 restrictions. Attendees were able to attend for free, a more conference-like event with lectures, demonstrations, a trade hall and social events over three days.

EFB Research

A new three-year research project to explore the transmission and triggers of European foulbrood (EFB), jointly funded by Bee Diseases Insurance Ltd and the CB Dennis Trust, began this autumn, led by Monika Yordanova at Imperial College London. The PhD venture will focus on investigating how the bacteria responsible for causing EFB are transmitted. Another aim is to explore some of the factors that may enhance the virulence of the bacteria, which may allow identification of management practices that reduce the severity of the disease.



Monika Yordanova

Busy Bee

Bee enthusiast, Sophie Wakeman, aged 7 from North Warwickshire, has been busy this summer walking more than a hundred miles dressed in a colourful bee costume to raise cash to protect her favourite insects. Sophie explained: "I love bugs because they are very beautiful and important but most people don't like them. I thought I could raise some money to help a species of insect. Bees are really important and adorable, so I picked bees. I feel really happy that people have helped me raise money for the bees." Anne Rowberry, Chair of the BBKA, said: "Well done Sophie! Here at the BBKA we are delighted to receive a donation of £613 to help the bees ... We are so pleased to have a budding young entomologist to support our bees."



Sophie Wakeman

Search and Destroy

The Channel Island of Jersey has been trialling a new Asian hornet tracking method using sniffer dogs. Two dogs participated in the trial; one a Springer Spaniel search dog from England and the other a local Leonberger. The dogs had been given training using dead nest material before being field tested where results were said to be promising. Jersey has had almost 50% fewer nests found and destroyed in 2020. However, weather may be a factor in the lower numbers.

Curious or Focused

US scientists have looked at how differences in instinctive foraging choices between worker bees in a colony influences the collective behaviour of that colony. The study, published in the *Proceedings of the National Academy of Sciences*, artificially created different colonies consisting of curious, focused or mixed bees. The focused colonies' bees returned to trusted forage locations faithfully. The curious colonies' bees visited as many new as more familiar locations. In mixed colonies, however, the focused bees showed more enthusiasm for known forage sources in their waggle dances and this won over even the curious bees to the known forage source. doi.org/10.1073/pnas.1920554117

The Apiary in December

By Anne Rowberry, Master Beekeeper, Avon BKA

It is time to ensure that your bees have low varroa levels, sufficient food and their hives are protected from the elements and pests. Then, you can rest assured that you have done as much as you can for your bees ... and you can head off for that glass of home-made mead and Christmas pud!



All photos are by Anne Rowberry

Another year draws to a close. Days are short and temperatures low. The bees have probably been quietly clustering for several weeks but December brings some of the most important tasks, including:

- Check the mite drop and treat if necessary.
- Check food levels.
- Ensure the entrance is clear.
- Check water supply.

Check Varroa mite drop

It is a good idea to put a varroa board in and examine and clean it frequently. If, during the winter, the varroa board remains below the brood box and open mesh floor it will help to retain heat in the hive. Examining the board can give a lot of information, not only about varroa drop. The lines of debris on the board indicate where the cluster is in the hive, how far across the frames the cluster is spread and, if they are uncapping new supplies, how much food is being consumed.

At the end of November and beginning of December, the brood nest is normally very small or non-existent as the queen is not laying. Research done at Sussex University showed the optimum time to treat using oxalic acid is the beginning of December. The lack of brood means that varroa are outside the cells and can be effectively removed by one of the oxalic acid treatments applied by either the trickle or vaporising method. The efficacy for treating at this time can be in excess of 95%. Bees have a low tolerance to oxalic acid so only one application should be applied and the treatment should be recorded in your records.

For the trickle method: Make up a syrup with warm water and sugar in a 1:1 ratio. (1 kg sugar to 1 litre of water) and dissolve the sachet of 35g Api-Bioxal powder into 500ml of this syrup. This solution is trickled onto the bees using a large syringe. First remove the roof and crown board and dribble 5ml directly along each seam of bees. Try to choose a fine, still day and minimize the time the hive is kept open.

When sublimating oxalic acid: This method can be used without opening the

hive. Oxalic acid crystals are placed on metal pads, which are heated to vaporise the crystals; Api-Bioxal does leave a residue when it is used. This treatment can be applied through the entrance, but take extra care if you have a polystyrene brood box as the delivery plate is hot and may damage the box. There have been various adaptations to the delivery of this method but please remember these acids can be very caustic so safety precautions, such as wearing safety goggles, breathing mask, acid-proof gloves etc., must be taken. BeeBase has fuller instructions and advice.

Mouse guards

Check to make sure these are the correct way up. The solid metal strip should be at the bottom so that any build-up of dead bees does not block the entrance. It is advisable to check the entrance is clear periodically and remove any dead bees in the way of the entrance.



Water

Having water nearby will be a great help to your bees in the winter; they do need easy access to water. They may use a little water from inside the hive provided by condensation, but additional water needs to be available as a well-insulated hive may not provide very much condensation. A few pieces of wood and moss placed in a bucket of water will ensure they do not drown, but can access what they need to dilute their crystallised stores. It will also need to be available when the queen begins to lay in early spring and they need water to produce brood food.

Protect hives from the elements

If it snows be sure to clear the entrance and put a shade over the entrance; a slate projecting or over the roof will help. Solar reflection from snow can be very bright and winter sun can warm the front of the hive. This may lure the bees out and seeing

the bright light, they may believe it is warm. Something shadowing the entrance may slow their exit so that they realise the temperature and make shorter cleansing flights. Bees can become chilled and die quite quickly but most fit young bees should be able to make it back to the hive.

Now the leaves are off the trees it is an opportunity to prune back a few more branches and look to see if there are any obvious wasp or hornet nests around. They should be dead or not in use at this time and the good news is the wasps do not reuse an old nest. You will be able to note their position and locate the new nests near by next summer.

The bees will really appreciate the spring bulbs you have planted. I know how much a bee flying on a mild winter day appreciates the hellebores in the garden. They are a great boost to the pollen that is available early in the year.

Finally, Christmas is nearly here and as well as wishing everyone well during the festive season, I give my bees a Christmas present of a pack of fondant. Do remember to cut a V-shaped opening into the pack for the bees to access the food and place it above the hole in the crown board covered by a layer of insulation (see photo below). It is insurance against the bees being hungry and dying during the winter. Some eat it all, whereas other colonies are much more frugal and hardly touch it. At least I can feel I have given them every assistance to come through the winter and I can relax as they have plenty of food.



Now it is time to put your feet up by a nice warm fire and enjoy reading a good bee book. The history of bees and beekeepers is fascinating!



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BBKA Highlights: a monthly round-up of plans and progress

New Exam Secretary

I am delighted to be taking up the post of Examinations Secretary for the BBKA. I have been a beekeeper for five years and keep between three and five colonies in suburban Sheffield. I am a member of Sheffield BKA where I have served on the committee as Chair and Event Secretary. I have taken three of the module exams; I loved the experience and would recommend them. I am really looking forward to being involved in the process of providing these amazing learning experiences to beekeepers. Previously, I have worked as an Office Manager and administrator for a software company and hope my experience will be valuable in my new role. As well as beekeeping I am a keen cook and long distance runner, two things that often go hand in hand. The prize for honey cake at my local honey show continues to elude me though. I am looking forward to talking to many of you over the coming years. Especially if you have top tips for honey cake!



Nicky Campbell

BBKA Online Talks

The dates of some BBKA talks are on the BBKA website; we hope to arrange more, so please keep checking. I hope you enjoyed Pam Hunter's talk in October on Plant and Insect Evolution. We have added a calendar for talks being offered by different associations to the BBKA website. Do include any you are hosting. It does not mean you are inviting the whole of the BBKA membership to join you, it can be for association members only, but it will help to avoid clashes with other talks, if it is possible. If you have any topics or lecturers you would like to hear please email me and we will try to include them in the BBKA series of talks.

Anne Rowberry, Chair

Why Do We Need Reserves?

Trustees are expected by the Charities Commission to ensure that their charity conforms to two basic principles: their activities further the approved charitable objectives, and the financial affairs are run in a prudent manner. Focus here is on the second principle.

Reserves are created to act as a financial buffer for an organization against potential and unexpected shocks. The 'rainy-day syndrome'. This might, for example, be a legal case, a fire, a total collapse of the financial markets or the unexpected impact of a viral outbreak! Our stated reserves policy, in the interests of common prudence, requires that the BBKA hold at least six months of anticipated expenses in reserves. It means that were the inconceivable to occur and the charity were forced to close, there would be sufficient funds available to ensure that all liabilities owing to creditors, employees, landlords etc. could be fully settled. This is only sensible and standard practice among all

well-run charities. In addition, we received a very generous legacy back in 2014 from Mr J Hopkins to establish a training apiary and improve the educational facilities at Stoneleigh. Following agreement with the family, and after a rigorous planning process, this is now being actioned.

So, at the end of our 2019 financial year we held reserves of £900k. Six months of costs amounts to ca £550k, the Hopkins legacy fund to £250k, leaving a buffer of £100k. The BBKA has done an effective job in managing the charity through the problems of lockdown when donations have been particularly difficult to secure, but we continue to face uncertain times. Our 2021 budget anticipates a deficit.

The officers and trustees of the BBKA continue to run the financial affairs of the charity in what we believe is a common-sense manner, with the emphasis on value for money, and focusing exclusively on benefit to bees and beekeepers.

Howard Pool, Trustee

Asian Hornet Numbers

I always look forward to the winter solstice and wonder whether my bees do too, signalling, as it does, the promise of a new year. While those pages are yet to be written, the past year has been 'interesting' to say the least. Personally, I have found it difficult to find my feet as a BBKA trustee, especially so, stuck on my isolated rock far south of my link associations. I hope to do better next year.

Here on Jersey, my main focus has been on the Asian hornet invasion. I had predicted an approximate doubling of found nests from 79 in 2019 to 150 in 2020, but I am delighted to have been proved wrong because, at the time of writing in October, there have only been 38 found; less than

half 2019's total. Though every day, like all the other members of the Jersey Asian Hornet Group, I wonder what have we missed? And that I might never know. One thing is for certain: I will not be predicting next year's nest total so confidently! Season Greetings to you all.

Bob Hogge, Trustee

Christmas Opening

The BBKA office will be closed for the Christmas period from 4.30pm Thursday 23 December 2020 until Monday 4 January 2021. All the team at Stoneleigh HQ wish our members a peaceful and healthy Christmas and New Year.

Leigh Sidaway, General Secretary

Honey is a Gift!

As beekeepers, we are fortunate if we have surplus honey to enjoy. The festive season is often a time for sharing jars with friends, family, colleagues or neighbours. Our bees might disagree, but we know the pleasure of giving: The wonderment of next-door's youngster bearing home a frame straight from the hive; a now 'bee-less' senior association member, looking forward to a prized section; texted thanks from a friend enjoying a tiny jarful on hospital porridge. Sealed, carefully packed and posted properly, honey may cheer those whom circumstances prevent us from seeing in person. Who will share yours?

Joyce Nisbet, Trustee

Inspiration

What has the BBKA ever done for us? Yes, it is capitation time, and the festive season. If you are seeking unusual gift ideas, look up the wax wraps guide in October 2020 *BBKA News*. Sustainable and easy to post. My local branches, Solihull and Warwick and Leamington BKA have also run soap-making and wax products workshops. Perhaps your branch has hosted something similar. Thoughtful bee-related ideas that have been inspired by a BBKA event or an article. Compliments of the season!

Suzanne Bennett, Trustee

2020

COVID-19 has shown me just how fragile everything can be. It has taught me to appreciate friends, family and the world in which we live. Let us all hope that 2021 brings change for the good and our bees carry on with their lives without too much external interference. Stay safe.

Gareth Morgan, Trustee

Dealing with Disaster

By Celia Davis, Master Beekeeper, NDB, Warwickshire BKA

Have you experienced one or two 'disasters' that have left you hot under the collar? Celia Davis takes a cool-headed look at some common concerns and offers some simple solutions.

This is a very daunting article title, I know, but beekeeping can bring so many disasters – at least they appear to be disasters at the time! However, they mostly just need to be put into perspective. Faced with calamitous events, the important thing to remember is not to panic. Instead, consider what the worst-case scenario might be, which is not usually the end of the world anyway. Having said all that, platitudes are not really sufficient. Of course, a disaster might be a minor setback for the beekeeper with just a few colonies. However, disasters may mean loss of livelihood, at least temporarily, for a commercial beekeeper who relies on his/her bees for their income. This would be a real disaster, but I am assuming for the purposes of this article that a commercial beekeeper is going to have the necessary knowledge and experience to largely avoid the problems that trouble the rest of us. This article is, therefore, primarily directed to the non-commercial beekeeper.

It is possible to split disasters into three categories: those due to natural and environmental events, over which we have no control, beekeeping problems which are quite different and a few miscellaneous ones.

Natural disasters

Here we can list a number of disaster situations, including:

Floods. These have become more frequent in recent years and, as I write, our local river has covered acres of fields with flood water.

High winds. These, too, seem to be getting more frequent and more extreme, and can blow over hives which are exposed or not strapped down. They can also bring down branches and even whole trees, that can crush a hive if it is in the way.

Animals in the apiary. There are a few that spring to mind: green woodpeckers, rats, wasps and to a lesser extent, mice and badgers. Farm animals such as sheep and cows, who like to scratch themselves, can push over hives.

Floods and high winds

That is an interesting list and if it is carefully considered we can see that most of these problems can be avoided, ensuring that they do not become disasters. The first two are dependent on an apiary's situation. It is possible to ensure that hives are never placed where they can be subject to flood. When considering out-apiary sites, firstly use your eyes and common sense, and ask around before you place your hives there. Remember that what is a quiet babbling brook when you view it, can become a raging torrent after heavy rain. Near where I live is a beautiful little river called the Blythe. It is very peaceful and quite idyllic, a place where I have seen hundreds of banded demoiselles flitting just over the water like tropical butterflies on a hot summer's day. However, Blythe is what we call a 'flashy' river and following heavy rain, it quickly becomes very angry, breaks its banks in numerous places and floods acres, sometimes closing roads. So do not be lulled into a false sense of security.

Also to avoid are sites that are exposed to high winds. If the site is unavoidably windy put up some sort of windbreak and, in the longer term, grow a hedge. Ensure hive stands are really strong and secure, and strap the hives to them in the winter. Trees can be a particular problem; they may be perfect in giving some shade in the apiary, as well as sometimes providing forage, but it is usually wise to site hives a little away from them to avoid branch-fall damage. Keep an eye on the branches near the hives and either remove or prune any threatening ones, or, if they are not your trees, consult the landowner.

In all these cases hives may be completely wrecked in one way or another and the bees may, or may not, be dead. There is nothing to do but salvage what you can and repopulate the hives the following season, after moving them to a safer place. In the case of wind and tree damage, the bees may survive and can be rehoused in another hive, rescuing as many decent frames as possible. Feeding them with syrup or fondant, depending on the time of year, can help them recover, which they often do.

Damage by animals is largely avoidable

The green woodpecker is probably the most destructive. Once one of these discovers the treats inside a beehive, it will have no difficulty in living up to its name, indeed 'wood-borer' would probably be more accurate! It will bring its family and friends and they can make short work of wooden hives in particular, creating huge holes through which they can access the bees inside with their long tongues. The holes they create let in the wind, rain, snow and sometimes rats, and the colony often dies. Damage usually only occurs in winter when their normal food of ants becomes difficult to get in frozen conditions. The answer is pre-emptive protection of hives with wire netting held far enough away from the hives to deny access. Our other two woodpeckers do not learn this destructive habit.



Green woodpeckers can make short work of a wooden hive, creating large holes through which bees can be accessed. Once such a hole has been made the colony can suffer rain, snow and mice entry and it can often succumb. The best method of protection is to wrap the hive in wire netting that is held well away from the hive walls, so the woodpeckers cannot get a 'toe-hold'. Photo by A Heath.

Wasps can cause havoc in the late summer. Again, it is best to anticipate the problem. Reduce entrances down to a very small space as soon as the summer honey crop is being removed, or even earlier if necessary. If the wasps persist, it is possible to reduce the entrance to a single bee space and they may also be deterred by a largish piece of glass placed, sloping, over the entrance. The bees quickly learn to go round it, but wasps do not seem to be able to work it out. Artificial wasp nests and traps are available, but please take care with traps as, for most of the year, wasps are very useful creatures.

Mice are an irritant, but I would not classify them as a disaster. They are very easy to keep out of hives by restricting entrances in the autumn, after the ivy harvest, ensuring that they are enlarged again in the spring. Narrow entrances with a depth of less than 8mm work excellently. Rats occasionally can also cause problems by gnawing woodwork, and the usual methods of getting rid of them can be adopted, being careful to use poisons safely. Traps are quite difficult as rats are very clever animals not as easily seduced by food as mice, so I have found you have to be canny to catch them.

Badgers can wreak havoc and have been known to wreck hives, particularly nuclei. The hives may need to be anchored to the ground and we have found in our branch apiary that a metal grid under the hives may be the only way to keep them out. Jeyes fluid may deter them, spread copiously around the apiary, but if your apiary is sited on one of their regular runs you might as well move.

As far as farm animals are concerned, always ensure that they cannot reach the hives using a stock-proof fence.

Beekeeping disasters

Now we come to our second group of disasters, some of which affect most of us if we keep bees for any length of time.

Disease

The most obvious ones, which every beekeeper dreads, are the foulbroods, and particularly American foulbrood (AFB). The thing about AFB is that its control is out of the individual beekeeper's hands. Once confirmed, the Bee Inspector will take over and oversee the destruction of bees, frames etc. according to the regulations. This may apply to European foulbrood (EFB) too, or there may be treatment with shook swarms and, occasionally, with antibiotics. This can all seem like the end of the world for the unfortunate beekeeper with just a few colonies in one apiary, but help is at hand in the form of Bee Diseases Insurance Ltd (BDI). Insurance against bee diseases has to be paid up-front of course, like all insurances, and may seem a waste of money, paying for something you hope you will never need. I have been paying for 40 years and, thankfully, have never had to claim. One snag that some beekeepers find is that they have not paid for sufficient colonies and are, therefore, not covered. My system has always been to count up all the boxes which may, at some time in the summer, contain a colony of bees, and pay for that number. In most cases the normal subscription paid to the association at the beginning of the year covers three colonies but remember you may accumulate bees through swarm controls, nuclei and so on. BDI policy is not to pay anything if the full number of colonies, in every apiary, is not covered. Providing you have adequate cover, compensation will be paid, linked to current prices and, although the foulbroods are a nuisance they are not the calamity they might be.

Once again, prevention is the best cure and any second-hand equipment must be regarded as suspect and scorched before use. Never use second-hand frames which have no bees on them and be cautious of bees which are bought-in.

Nosema can cause many colony losses and is much more common than most people realise. Strict hygiene, regular comb changes, sterilisation of all out-of-use boxes and microscopic inspection of the bees in the spring are all ways of reducing incidence of nosema. There is no chemical treatment.

Chronic Bee Paralysis Virus appears to be more common than it was. This can be frightening as lots of dead bees appear outside the hive. My own experience of this is that the colony can recover and go on to do well, but undoubtedly it can also die. There is nothing that can be done about it apart from shovelling up the dead bees, and it is not linked to varroa.

Varroa. This brings us to the dreaded varroa mite and its associated viruses. This has probably accounted for more disasters over the last twenty years than any other single factor. Again, its worst effects can be avoided. Careful monitoring, so that the exact condition of the colony is known, and timely treatment when necessary, are the twin requirements. There is plenty of help on the National Bee Unit's (NBU) BeeBase site about this. As a rule of thumb, varroa numbers must be as low as possible in the early spring. If they are not, treatment must be applied, and then further treatment must be used at the beginning of August. The aim must be to treat before the winter bees are produced as, if they are not protected the colony will die in the spring. Later treatment may very well kill mites but will not touch the viruses which will rampage through the colony when varroa levels rise in the spring.

Queen problems

Most other potential disasters relate to queens; poor queens, loss of queens and queens doing things they should not. Basically, a colony without a queen is a dead colony. The best cure for any of



Signs of a drone-laying queen.
Photo by Celia Davis.

these problems is to have spare queens. The number will depend on the size of your enterprise. A number of nucleus hives containing queens, raised from spare queen cells during the summer is, like BDI, an insurance policy. The drone-laying queen discovered on the first spring inspection, the one lost on her mating flight, the queen improperly mated and who is being superseded, the queen inadvertently

dropped in the grass, and the queen squashed by the careless thumb, can all be corrected swiftly by having a spare queen in a nucleus. The only problem that is not solved by this approach is a hive containing laying workers. They are now lost, so shake them out away from the hives and remove the hive itself.

Problem-solver 'rules'

I would finish this section by stating three rules that can save many problems. These are:

- Mark all queens so that you can see them.
- Never cut out any queen cells until you have ascertained that a queen is present.
- Never inspect a colony which has a virgin queen in it. Remember it can take three weeks, or longer, for a new queen to begin laying after the departure of a swarm.



Wax moths can wreck combs in store.
Photo by Celia Davis.

Miscellaneous problems

Here there is wax moth. This is not usually a problem in hives, so does not result in the loss of a colony, but potentially can wreck stored combs. Keeping frames cold during the winter helps and putting them in the freezer (ask permission first) for a few days will kill any wax moths and larvae. Acetic acid (ethanoic acid) fumigation is also effective. When storing boxes of comb, separate them with sheets of newspaper and keep brood combs and those containing pollen separate from supers.

Spraying chemicals can be a hazard, but is less so now. Even so, bees can be affected by agricultural and garden pesticides. Following a poisoning event, you must feed the bees really well.

The doomsday scenario

It will be obvious that most disasters are avoidable but occasionally they do occur. If colonies are lost it is important that the beekeeper understands why because they can then prevent it happening again. It is essential to ensure that new bees go into clean boxes and onto clean comb. This will go a long way to avoiding most disease problems. It may be necessary to restock if the enterprise is very small, but hopefully experience will have been gained. It is most important to realise that we all make mistakes though – and you do not have to beat yourself up about it.

‘Disasters can usually be resolved with some thought and there are always useful lessons to be learned from them, which make us better beekeepers.’

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Selling Hive Product Cosmetics and the Law: Brexit

By Andy Bullen, Health and Safety Manager and Safety Assessor, ADSL Ltd

As I write, there is no confirmed trade deal between the UK and the EU. However, we now have confirmation of the *Statutory Instrument (SI) Product Safety and Metrology etc. (Amendment etc.) (EU Exit) Regulations 2019*. This was introduced for the case of a no deal outcome and will come into force on 1 January 2021. There will be further SIs to implement technical modifications, but in essence the regulation will remain. The outcome of the trade talks will have little effect on the regulations.

What will not change

The requirement for a Responsible Person (RP), a Cosmetic Product Safety Report (CPSR), a Product Information File (PIF) and notification on a cosmetic portal. Labelling requirements will undergo some small some amendments.

What will change

A UK-based RP will no longer be able to sell cosmetic products in the EU. The

Cosmetic Product Notification Portal (CPNP) registration of all UK-based RPs will be deleted on 1 January 2021. An EU-based RP will no longer be able to sell cosmetic products in the UK. A UK notification system will be in place on 1 January 2021. If you live in Northern Ireland things are slightly different and I will come to that later.

What you need to do

All UK-based RPs must download an .xml file of their current CPNP notifications before 1 January 2021. Create a new account on the UK notification system. Keep the .xml file on hand as you will be able to upload the file directly to the new system. This will save uploading each product individually. The UK notification system will be live as from 1 January 2021. There will be a ninety-day grace period to upload to the new system (1/1/21–1/4/21) after which cosmetics sold without notification will be illegal. If you wish to sell both in the UK and EU, an EU-based

RP will be required as well as a UK-RP. Both addresses need to be on the label. For products destined to be sold in the EU, the RP address for the EU must be underlined and vice versa for the UK. This includes products sold online.

Northern Ireland (NI)

If you live and sell cosmetics in NI, you must adhere to the EU Cosmetics Regulations. For the purposes of EU legislation, NI is considered as being part of the EU. A NI address will enable you to sell cosmetic products in the EU. If you wish to sell cosmetics in the UK, you will need to comply with both UK and EU legislation and notify on both CPNP and the UK notification system.

Finally, if you live in the UK and wish to sell cosmetic products in NI, you will need an EU-based RP and both the RP addresses must be on the label along with 'manufactured in the UK'. If you have any questions, please email verdigris@me.com

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Art, Bees and the Plight of Our Planet

By Russ Shearman, Buckinghamshire BKA

Matt Willey, a US-based mural artist and activist, is on a mission. He aims to paint 50,000 bees and other pollinators on a variety of surfaces across the world. He has been in the UK, painting at Pipers Corner School.

Russ Shearman tells us what drives Matt toward his goal and why it is so important to him.



A close-up of the detail Matt Willey puts into his honey bee paintings.

Photo by Russ Shearman.

In these days of pandemic and lockdown, it has never been more prescient to discuss and consider the nature of our place in the world, the effect that we are having, knowingly or unknowingly, on the future of all life on the planet, and the massive and sudden impact the smallest forms of life, should they suddenly appear or disappear, can have upon our existence. So it was under the shadow of COVID-19 and the harsh reality of social distancing that I met Matt Willey, US-based mural artist and activist, to discuss and watch his latest art installation come to life at Pipers Corner School, near High Wycombe, Buckinghamshire; his first work outside of the US.

An established and successful mural artist of repute, it was a close encounter in 2008 with a solitary wayward honey bee that gave Matt cause to make a fundamental and philosophical shift in his work; one that has enabled him to apply his talents as an artist and to advance his concerns as an activist. This seemingly inconsequential meeting with a bee has inspired the past five years of work for Matt and is likely to see the project continue for several more years to come, as he completes a series of murals around the world that will contain in total 50,000 bees, together with other pollinators.

Seven years after his bee 'encounter', Matt's desire to raise awareness of the plight of pollinators in general, and especially honey bees, has seen him establish his company 'The Good of The Hive' and seek funding with the intention of starting conversations, both globally and within communities, schools and businesses, by creating very large art installations featuring, principally, honey bees. This shift to being the CEO of a company has not been easy for Matt, who much prefers to let his work speak for the project, but he acknowledges that the topic requires a narrative if it is to gain the attention of the wider audience necessary to bring about the fundamental changes required.



Matt Willey painting a mural at Pipers Corner School, by Russ Shearman.

"The trouble is," says Matt. "People will acknowledge the plight of pollinators, but ..." he pauses, almost considering if he should go on. "People want to save people, not bees". He then wryly goes on to say, "You beekeepers get it," midway between mirth and a heavy resigned sigh. "That's preaching to the choir." But, as Matt states in one of his recent Facebook posts: "If we can change the way we look at a bee we will change the way we look at each other and the world around us."

Philosophy in art

As beekeepers, we are far from being Matt's 'target' audience. He wants to shift mindsets, change perceptions, ask questions and get people both thinking and talking, and his art is the vehicle by which he is making that happen; his murals are making people talk the world over. From fire stations to corporate headquarters, Matt's favourite locations remain schools, not only from the aspect that younger people engage with such open and honest curiosity, but also as part of a process of education in all aspects of bees and pollinators, from how they live, what they do for us and what we must do for them to ensure they can continue to do all we need of them.

High Wycombe seems an incongruous addition to the list of locations where Matt's growing magnum opus can be seen. Having already completed murals and art installations in such locations as Florida, San Diego, New York and Washington DC; High Wycombe is the 28th mural in this



Matt helping to educate the schoolchildren about bees, philosophy and helping our planet. Image, courtesy of The Good of the Hive; photo by Anna Walker.

expanding series and the first major artwork project outside of the US since his company was formed. Previous projects have involved painting a 25-foot bee on the roof of a barn. That big, it was intended to be seen by crop-dusters as they sprayed the surrounding fields “... just so they can see what they’re spraying on!” One of his more recent works, in North Carolina, involved painting for eight to ten hours each day in scorching sunshine, with temperatures in the high 30°C and humidity approach 90%. So, it should be no surprise that the weather in the UK in September and October was truly a breath of fresh air.

Like minds meet in the UK

Arriving in the UK on a wet day at the very end of August, in the midst of the global pandemic, Matt’s presence here in the UK, and High Wycombe specifically, is down to Madeleine, a GCSE student at Pipers Corner School. In 2018, Madeleine, had been given a class topic to research and write about ‘work’. Her approach was to move away from the more mainstream ideas and to come at this with a fresh perspective. She focussed on bees. It was while doing her research that she found Matt’s project to paint 50,000 bees on buildings all round the world. So Madeleine contacted Matt for a telephone interview for her project. It is easy to see how Madeleine’s thinking very much appealed to Matt’s ethos and philosophy behind this project. So, while visiting London in November 2019, Matt met Madeleine and visited Pipers Corner School, who already had an established and advanced environmentally-focused syllabus, and it was then that the project became a certainty. However, this venture has not been without its set-backs and hurdles. Originally intended to be done during the month of June this year, the

pandemic nearly derailed the project entirely. Because of the value of project as both an educational experience at the school and to show that normality can be achieved with desire and communication, it was determined that the project should, if not must, go ahead.

Can art help to change minds and improve the planet?

My first conversation with Matt occurred on WhatsApp, as he quarantined on-site at the school and planned this next piece. He freely admits that planning is a term used loosely, as he has found that works can take a different direction once he gets into each piece. Matt talks about his work, art and activism and the plight of the planet, not just the pollinators. His work and his mission speak not just of the plight of the honey bee but he seeks to engage us and encourage us to ask questions such as ‘how do we change?’ He talks about issues in

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Matt getting a bee's leg 'just right', by Russ Shearman.

society and looks to our economic as well as our spiritual well-being, with seemingly boundless and undeterred enthusiasm. His drive to ensure he stays 'on mission' is a force that comes from the momentum that has developed as this global project progresses and grows.

Unlike some 'graffiti' artists and muralists, who arrive after sunset and aim to be done and gone long before dawn, Matt's work is painstakingly precise, and each project ideally takes six to ten weeks to complete. Without spray cans, air brushes or projecting his design upon the wall where he is painting, Matt's work is entirely 'free hand' and measured 'by eye'. Each work is exquisitely detailed and precise. Given each bee can take between two and three hours to paint – well, the maths speak for themselves. It is during this length of time completing each mural, that Matt sees the impact of his work as it progresses. The time taken enables people to see the work develop and allows people passing by to engage as the project completes over hours, days and weeks. Some people will freely approach him and engage in conversation about the 'what's' and the 'why's', while others will watch from a distance, but approach him with questions or for conversation after watching the work come to life over time.

It seemed a somewhat banal question to ask but, in representing a beekeeping audience, I had to ask him: "did he keep bees?" It should be no surprise that Matt's schedule prevents him currently from being able to keep his own bees, although this does very much remain a longer-term aim. Matt is happy to say he harbours the desire to someday have a log hive or two in his back yard, as promoted by Michael Thiele at Apis Arborea <https://www.apisarborea.com> and the bee re-wilding project. Before then, Matt has his 'first hive' of 50,000 painted bees to finish, with tens of



A happy Matt Willey at work, by Russ Shearman.

"Matt's work is painstakingly precise, exquisitely detailed, and entirely painted 'free hand' without using spray cans or air brushes."

thousands more bees to paint and more conversations to be had and more curious minds to inspire.

Matt is currently considering other locations in the UK and Ireland to add to the 50,000 bees he is going to bring to life on the sides of buildings and in public spaces and open view. But he is happy to admit that he is in no rush to complete this. He knows that, on his current schedule of six to eight murals a year, he has a few years to go and many more people to excite, persuade and educate into the



A close-up of part of the school wall, by Russ Shearman.

plight of the honey bee and raising our awareness to ensure those quietly buzzing voices are not drowned out and do not go unheard.

Matt's progress and the amazing and intricate designs into which he paints his bees can be seen in glorious hi-definition detail on his website at <https://www.thegoodofthehive.com/>. The site contains updates of all his past and present projects with their locations and the number of bees included in each work. Here you can find links to his beguiling podcasts and inspiring videos on YouTube. I would definitely recommend watching 'Xander's Bee' <https://youtu.be/OSv7MMvIWRk> and glorious photography on Instagram.

Matt talks about the bees' preparedness for altruistic suicide, in that a bee will see its own demise as being for 'The Good of the Hive'. As John Chrysostom, Archbishop of Constantinople, 397AD until his death in 407AD, is attributed as saying: "*The bee is more honoured than other animals, not because she labours, but because she labours for others.*"

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Honey bee entrance monitor system

By Cwyn Solvi, Queen Mary University of London.

The main aim of this project was to develop an entrance monitoring system that can track individual honey bees entering and exiting their hive. We also wanted the system to be used with a variety of insects, to cost under £250 per unit and to be sufficiently user-friendly that researchers at all levels could use the system. Below I describe how my collaborators and I have accomplished these goals.

The system

Our design uses the Raspberry Pi microcomputer system (<https://www.raspberrypi.org>), and consists of a single Raspberry Pi microcomputer, a Raspberry Pi camera, and an external hard drive to store the photos taken. These items together cost around £150. The additional cost of an encasement for weather protection, produced using 3D printing, should cost no more than £25 (see figure 1). My collaborator, Dr Tim Gernat (US/Germany), wrote the Linux-based software (adapted from his previous software for tracking social interactions within the hive) and helped to implement this onto the Raspberry Pi system.

To monitor bees entering or exiting the hive as unique individuals, bees are tagged with b-codes (unique black and white designs on waterproof paper), which were superglued to the thorax.

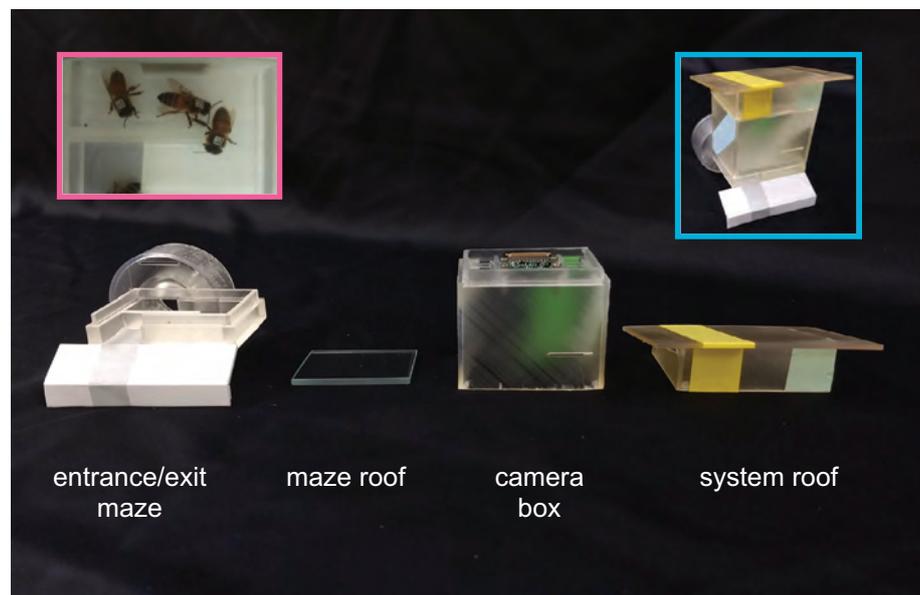


Figure 1. The honey bee entrance monitor system components. Bottom row from left to right: the entrance or exit and maze unit, which sits at the bottom of the monitor system; the maze roof, which is placed on top of the maze and the camera box is placed above this. Finally, the system roof is placed on top of the camera box. Top row: the photo on the left is a view looking down into the maze with three honey bees inside; the photo on the right shows the whole system set up and ready for use. Photos by Tim Gernat.

The monitoring system is attached to the front of the hive and the camera takes photos continuously every 1/2 second. Later, these photos can be processed with Dr Gernat's software to determine the direction in which the bee is moving, and which bee exited or entered the hive. An example is shown in figure 2 opposite.



Figure 2. A series of photos taken of a honey bee travelling through the maze by Cwyn Solvi.



Figure 3. Honey bees are tagged with b-codes, unique to each bee. These are black and white designs on waterproof paper, superglued to their thorax as shown opposite by Cwyn Solvi.

Collaborations and uses of the monitoring system

Another aim of this project was to ensure the system was sufficiently user-friendly to be incorporated into a variety of student research projects. Towards this aim, in late April 2018, I visited the University of Oslo to help set up the system in Dr Anders Nielsen's laboratory. Dr Nielsen's student, Pawel Jan Kolano, took an early version of the system and used it during his MSc project in which he investigated the effects of varying levels of neonicotinoid exposure on bumblebees and on foraging returns and overall colony health.

I also worked with Dr Olli Loukola at the University of Oulu, Finland to set up the monitoring system for future research. Two of his undergraduate students helped to establish the system in his laboratory for use in both honey bees and bumblebees. Future plans are to use this system for upcoming projects in the laboratory.

I then collaborated with Dr Andrew Barron at Macquarie University, Sydney, Australia to set up the monitoring system in his laboratory. Thibault Dubois, one of Dr Barron's PhD students, is currently using several monitoring system units to investigate how foraging honey bees respond to competition.

Future directions

This has clearly been a successful project, having accomplished all our aims. We established a monitoring system that can track individual bees, as well as any insect upon which a small tag can be secured, while

entering and exiting their hive. The system can be built for less than £175 per unit and is user-friendly, enabling many research laboratories to take advantage of its capabilities in their students' projects. One further endeavour that we hope to accomplish by the end of this year is to publish a methods paper detailing the system and its potential uses for research with honey bees and other social insects. We thank the BBKA for supporting this project. ■

Urban bees: can businesses help through green infrastructure?

By Rinke Vinkenoog and Matthew Pound, Northumbria University.

In this study we focus on honey bees and other pollinators in an urban landscape. The central focus of the study is the Grey Street Gathering planters: two small flowerbeds that are seasonally installed in the very heart of Newcastle upon Tyne. Apart from the social and economic benefits this novel green space brings, we aim to establish whether small sites like this can have an impact on urban pollinators. In order to do so, we monitored fourteen urban flower beds of different sizes in Newcastle. In addition, we also monitored two rural sites for comparison. At each site, we identified the plants in flower, counted the numbers of floral units per plant species and observed which insects (and how many) were visiting the flowers. An overview of the sites is given in Table 1. In addition to the field work we also analysed honey samples from a selection of urban and rural hives and identified the pollen in this honey.

Site	Size in m ² (observed)	Av FU	Av insects	Av insects /1000 FU	Location
Grey Street	20	690	8.4	13.7	Urban
Ellison Triangle	30	569	20.9	28.9	Urban
Ellison Courtyard	50	1308	10.2	8.9	Urban
Newcastle Quad	70	1913	23.6	14	Urban
Hancock Museum	42	1450	27.5	21.2	Urban
Robinson Pollinator	52	2202	30.8	16.6	Urban
Robinson Wildflower	52	389	11.4	34.1	Urban
St Thomas	200	7532	126.3	19.9	Urban
Pilgrim Street	11	189.9	8.6	44.7	Urban
St John's Church	20	760	17.2	24.4	Urban
St James' Church	73	1945	25	14.5	Urban
St Nicholas Cathedral	40	242	3.1	12.1	Urban
Ouseburn Farm	50	1690	48.6	31.3	Urban
Ouseburn Meadow	90	500	34.8	143.7	Urban
Prudhoe Riverside	200	7053	88.8	14.2	Rural
Spetchells	200	3269	53.6	16.1	Rural

Table 1. Overview of sites monitored. Size: actual surface area monitored. Average (Av) number of floral units (FU) was calculated by taking the average of FU counts over the season. Average number of insects was calculated by taking the average of total insects on flowers observed over the season. Average number of insects per 1000 FU: the number of insects per 1000 FU was calculated at each visit; an average was taken of these ratios over the season.

Do honey bees use the Grey Street Gathering?

It has been shown that small urban planters benefit sweat bees,¹ but it is not known if honey bees will use them. At the end of summer 2018 we did observe honey bee use of the Grey Street Gathering, but this data was collected for a short period only. We posed the question: Does the planter have value to honey bees over the whole season? To answer this we performed pollinator surveys on Grey Street Gathering.

The planters were installed in April 2019 and in the first months they attracted very few flower visitors (Figure 1). Honey bees started visiting the planters in late June, and from that time onwards they remained one of the most abundant visitors.

At the Grey Street Gathering, honey bees predominantly visited sage flowers (*Salvia* sp.) There were three varieties planted here; all three were frequently visited by both honey bees and bumblebees (Figure 2). Visits to other flowers in the planters were few in number.

This naturally begged the question: Why did honey bees only start visiting the Grey

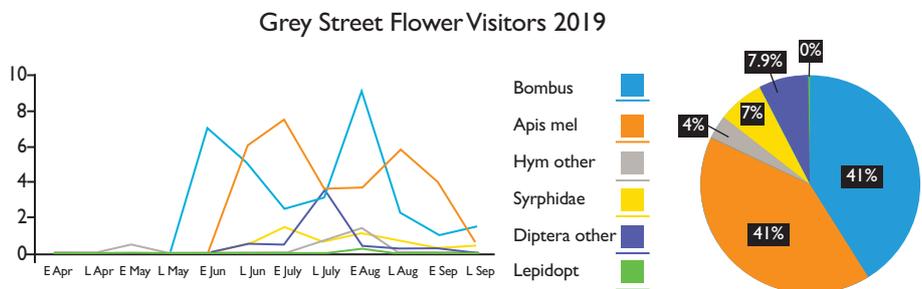


Figure 1. Flower visitors to the Grey Street Planters in 2019. Left: visit counts with time over the season. E = early part of month (day 1-15); L = late part of month (day 16-30 or 31). Right: proportion of total visitors calculated over the entire flowering season observed (April-September). Central Key: Bombus – bumblebees; Apis mel – honey bee; Hym other – all other bees and solitary wasps; Syrphidae – hoverflies; Diptera other – all other Diptera; Lepidopt – butterflies and moths.

Street Gathering in late June? The sages they forage on had been flowering in good numbers for several weeks already, and had been frequented by bumblebees (Figure 1). Yet honey bees only visited from the end of June onwards. Our nearest beehive supports this finding with abundant rowan pollen and occasional privet and box pollen in honey samples. The city bees also show a preference for knapweeds, hairy willow herb, clovers, meadowsweet, lavender and *Toona*. Interestingly this hive did not yield any pollen from sage flowers. It is possible this hive was not using the Grey Street Gathering. Other

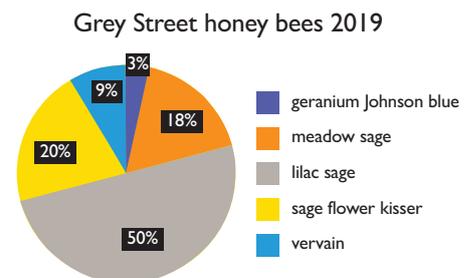


Figure 2. Flower choice of honey bees at the Grey Street planters.

hives are located closer to the site, but those beekeepers were unable to join in the study.

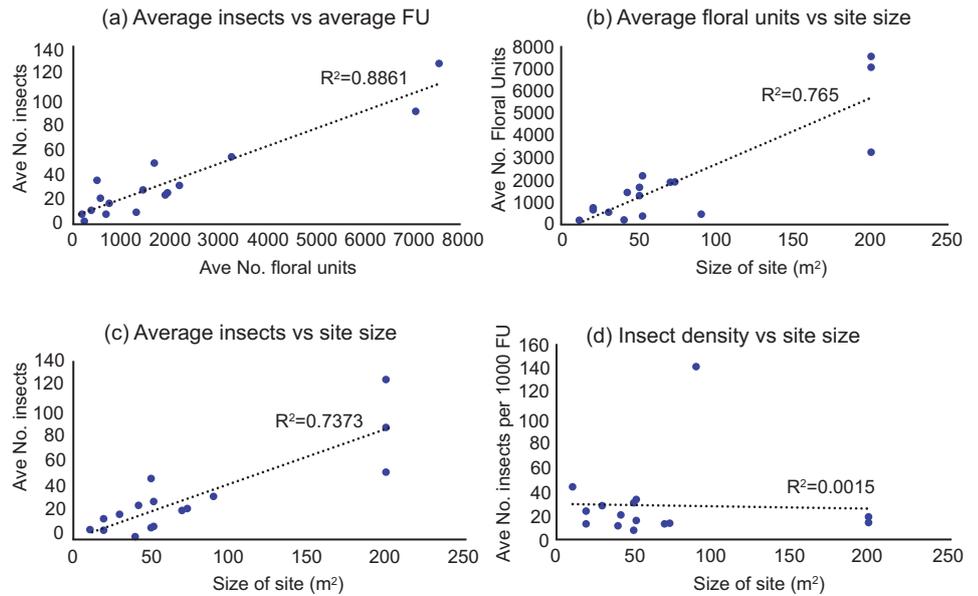


Figure 3. Overall flower visiting insects per site. (a) correlation between average number of flower-visiting insects and the average total number of floral units (FU) per site ($p = 5.48 \times 10^{-8}$); (b) average total number of floral units versus site size ($p = 9.3 \times 10^{-6}$); (c) average total number of insects versus size of site ($p = 2.06 \times 10^{-5}$); (d) average number of total insects per 1000 FU versus size of site ($p = 0.89$).

Does size matter?

We also asked: 'Do small green sites like the Grey Street Gathering have a significant impact on bee species diversity?' We wanted to understand whether there was an effect of size of green sites on pollinators, i.e., is there a 'critical size' a site needs to have in order to be 'good' for pollinators? In order to answer this, we first looked at the total number of flower-visiting insects in each site, and compared this with the size of the site in square meters and the amount of floral units available. As could be expected, there is a significant relationship between the number of insects and both size of the observed site, and floral units present. Bigger sites have more floral units, and attract more insects (Fig. 3a and 3c). There is also a significant correlation between site size and floral units (Fig. 3b).

This led us to ask: 'Does size matter in other ways – are bigger sites more efficient?' Our results suggest this is not the case. The relation between size (either in surface area or floral units) and average total insects is linear. Moreover, there is no significant correlation between density of flower-visiting insects and site size (Pearson correlation was used; data shown in Fig. 3d).

Do city centre beehives use the Grey Street Gathering?

So far, our pollinator monitoring results show this to be 'yes'. However, the near absence of sage flower pollen in any of the honey samples so far analysed is rather perplexing, especially given that 88% of observations were on sages. We see geranium and vervain pollen in our city centre honey and pollen pellet samples, but these only make

up 12% of honey bee observations in the field and are common in many city centre sites. As previously stated, there are a number of beekeepers with hives closer to the Grey Street Gathering who were unable to provide samples, and perhaps it was their honey bees we observed.

As part of the project we widened the honey and pollen pellet sampling net to cover the entire city and surrounding region. We distributed over 200 sampling kits and received 94 back. Despite this low return, we have samples from almost all city postcodes and a number from more rural areas. The results from this have provided some insight into the diversity of non-native plants that urban bees are using, such as: spirea (*Spiraea* spp.), begonias, sempervivums and Chinese cedar (*Toona sinensis*). Spirea and Chinese cedar are both bushes/trees. This highlights the other key finding from across the North East – trees are important for bees. As well as these exotics, we recorded pollen of buckthorn, chestnut, elder, hawthorn, horse chestnut, lime, maple, pear, rowan and willow. We also encountered pollen of typically wind-pollinated trees, such as oak and pine. Whether this was through contamination or was intentional is unknown. Even discounting the wind-pollinated trees, the diversity, and in some samples abundance, of tree pollen shows the importance of these flowering skyscrapers to honey bees. Therefore, while the Grey Street Gathering was important for local honey bees (41% of observed pollinators), honey and pollen pellet analysis shows the value of urban and rural trees. ■

Reference

I. Simao M-C, Matthijs J, Perfecto I. Experimental small-scale flower patches increase species density but not abundance of small urban bees. *Journal of Applied Ecology* 2018; 55(4):1759–68. DOI:10.1111/1365-2664.13085

The Very Practical Beekeeper

By Mike and Judith Rowbottom, Harrogate and Ripon BKA

How to make stable hive stands that avoid the need to bend your back.

Hive Stand

A stand of some sort is essential to elevate a beehive floor off the ground so as to avoid damp. For moveable frame hives, it is useful to raise the height of the frames to one that is more convenient for inspection; see later in this article for the perils of bending over. While beehives are made to standard dimensions, the stands to put them on appear to be as idiosyncratic as the beekeepers, with the exception of the WBC hive, where stubby angled or straight legs are built into the floor in the standard design.

A typical low-level stand is shown in Figure 1. Clearly this is very stable, it lifts the hive off the ground and the size of the side rail just matches that of a Modified National floor. These stands are very useful with nucleus colonies during the season. However, they leave the hive brood box at a low level requiring the beekeeper either to kneel down or to bend a long way down to make a brood inspection. Stands with similar top dimensions but with longer legs are sometimes seen as a solution to the low level ones, but longer legs result in top-heavy and unstable hives, and longer legs will need lower level bracing to avoid extra stresses on the leg tops, particularly when on uneven ground.

More than twenty years ago we purchased some equipment from a couple of retiring beekeepers, and they threw in two hive stands. We realised that they were made to an excellent design; a drawing of the design is shown in Figure 2, and a manufactured stand with a hive on it in Figure 3. The hive fits well inside the legs, resulting



Figure 1. A typical low-level stand.
Photos by Judith and Mike Rowbottom.

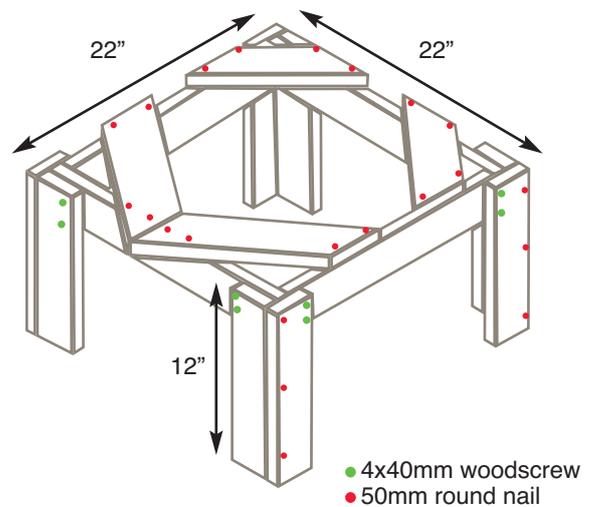


Figure 2. A higher stand, of good design.



Figure 3. The manufactured higher stand illustrated in figure 2.

in a very stable configuration, with the brood box lifted to a comfortable working height. The stand is quite light – around 4 kg (9lbs), not much more than an empty brood box, and so is easy to move around, if required. We have, on rare occasions, had hives with a brood box and five or six supers mounted on such a stand on a field margin. Tests have shown that the stands can support loads in excess of 100kg with no difficulty.

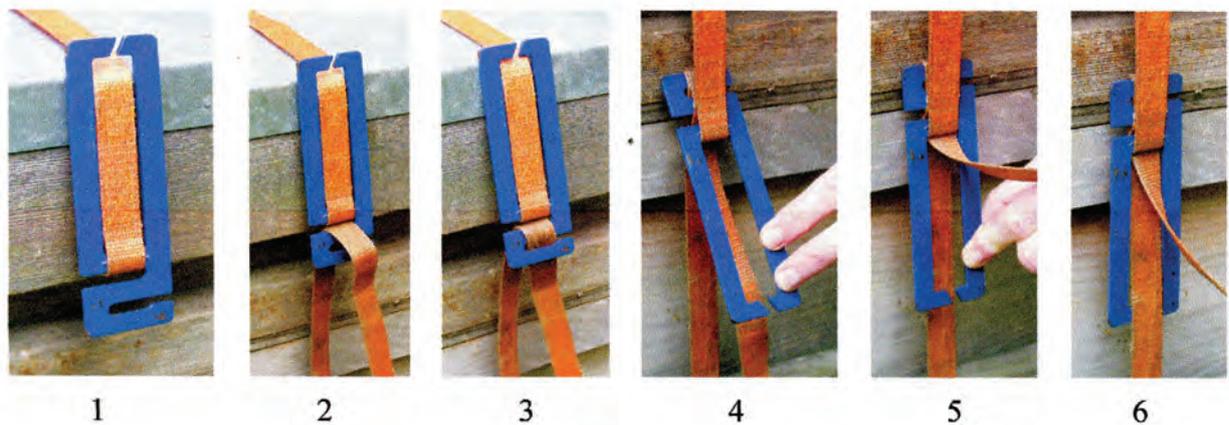


Figure 4. An 'up and over' strap.

The stand is made entirely from the same size timber – 75mm x 25mm sawn tanalised fence rail. This is one of the cheaper timbers generally stocked. Two 3m lengths should be adequate to make a single stand. The cost of materials is around £6. With this relatively low cost you should always have a supply of spare stands available for swarms or inspections. In manufacture, the square 'box' carried by the legs is screwed together, the legs are screwed on and then nailed, and finally the top supports are nailed on.

There are additional benefits from this stand. Should the ground where it is to be placed not be quite level it is straightforward to level the hive using pieces of slate. We have a 125-year-old slate roof on our house, so slate is fairly readily available in the garden after the winter. There is easy access on each side for a hive strap to be put around the hive without moving it. Also, the corners of the floor are accessible for lifting once the hive is strapped up. The drawing of the stand, marked up with the dimensions and fasteners, should enable it to be produced. Any cut ends of timber can be treated with a wood preservative. We did once stand a National hive on a milk crate, but they are not big enough and are slippery. We abandoned their use when I pushed the hive off while trying to push in a foam entrance block in the twilight!

Bee box-hive straps

Among our equipment, hive straps have seen a lot of action over the years, and they are robust items. When transporting bees, you need to be confident that the boxes are securely fastened, especially if the bees are inside your car with you. If the hive develops a leak of bees in the back of a pick up or on a trailer then you have a little time to plan what to do and get adequately protected before engaging with the bees. If the hives are inside your vehicle and the hive springs a leak you are immediately thrown into action. If it is light outside then the bees will generally go onto the windows; if it is dark they can go anywhere. Two straps per hive are recommended, as an accidental knock on a hive corner can turn the boxes enough to create a bee leak if only a single strap is used. Some beekeepers insist that the straps need to be side by side, others, including us, prefer the straps at right angles. To resolve this conflicting advice, you need to apply an unwritten law: 'If there are strongly held differing views on any matter in beekeeping then any of the views should probably work OK.' The main thing, either way, is to make sure the straps are very tight; the tension can be tested by 'wanging' the strap when a note, rather than a dull thud should be heard.

We have never felt confident that the so called 'economy' straps can be tightened enough to hold a hive securely. We prefer the 'up and over' strap illustrated in Figure 4 to the ratchet strap shown in Figure 5. There is no mechanism to get rusted up or jammed and they require less storage space in the bee box. A 3m strap length is ideal; it will go around a hive with a double deep brood box and

two supers with enough left over to work with. I have never wanted to attempt to pick up more than a double brood box or a single brood box with two supers, and a 3m strap is fine for this. Some dealers supply a 5m length as standard. These may be of value if securing hives on a trailer, but for strapping up a single hive that can be lifted safely, the excess strap is a considerable nuisance. We would strongly recommend keeping straps neatly coiled around their metalwork when not in use; trying to pull out a strap from a tangled heap on the floor is not a quick job. The photographs in Figures 4 and 5 illustrate the successive steps in fastening and unfastening the two designs of strap; the up and over strap removal is the reverse of fastening. One worthwhile practical exercise is to remove the metal end from an 'up and over' clamp and to replace it. They do sometimes come apart and how it goes back together is not immediately obvious.

Try out the straps at home first

With either of these straps some practice in advance of field use is highly recommended to avoid high stress levels if the operator does not understand the strap operation as well as he/she thought. Our knowledge of the 'up and over' strap and the ability to explain it were greatly boosted by an early morning 'phone call from a beekeeper desperate to get a hive moved using such a strap whose operation he did not understand. There were no internet connections, no Skype, no Facetime, no Facebook so explanation over the 'phone was required, describing what to do step by step using a strap to truss up a dining chair! It is particularly important that attention is given to the operation of the ratchet strap in advance of use. If the ratchet mechanism is not free to turn because of damage or corrosion then there is the real possibility that the only way to free the hive boxes is to cut the strap.

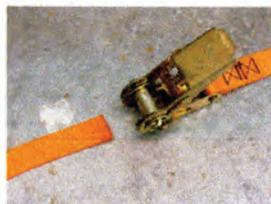
Some health and safety advice

Hopefully, this may make you think about your own actions while beekeeping, and avoid damaging yourself. First, a potential major hazard are the bees themselves, so a quick check of your protective equipment is in order before approaching a colony. A recurring hazard for me is getting distracted while fastening my veil, and then starting an inspection giving the bees ample access into my veil. I once got stung inside my nose from this and I do not recommend it.

Stay calm, and work slowly and deliberately

Maintaining a wary attitude towards the bees when starting to work on a colony is a sound policy. Not fear and trembling, but taking time to let the bees know you are on the case, and watching their response. If the bees are more defensive than usual, deferring the inspection to another time or day can avoid an unpleasant experience. Also, even the best of bees have bad days, so do not assume that your favourite bees will welcome disturbance whenever you think it is necessary.

To fasten:



1



2



3



4

To release:



1



2



3



4

Figure 5. A ratchet strap.

Do not lift overly heavy things

Plan ahead for any heavy lifting. First and foremost, know your limits and use a spring balance or luggage scale in advance if you are in doubt about the lift. Make sure your footing is good, that you have a good grip on the box to be moved, that you can move the boxes with a good lifting technique. Keep the box close, bend the knees not the back and avoid twisting while laden. Check that you have an agreed spot to put the box down. Have an intermediate landing place identified if moving a box some distance. If you have supers that are too heavy for you to lift as a single item, transfer some of the frames to an empty super to give two manageable lifts. This particularly applies if you are dealing with a tower. If you can keep bees with another beekeeper this makes lifting a much safer option. The Modified National hive is often criticised as being too small, but it is by far and away the best hive to pick up.

Know how you react to being stung

Always keep an eye on your reaction to any stings that you get, especially when starting out in beekeeping. Any reactions in your body away from the point of the sting are potentially hazardous. If you experience such reactions then urgent action is required. Ask your GP for an allergy test to establish how sensitive you are to bee venom; this may be done at a hospital. If you have an increased sensitivity we strongly recommend that you do something to address it. It is possible to become desensitised, although the programme of treatment is a long one. It is hospital out-patient based and has a reported success rate of around 80%. Our personal view is that just relying on an EpiPen injector is too risky a solution, especially if you keep bees by yourself. Fatalities of beekeepers from stings are not unknown. However, if you go down this route have two injectors, rehearse how you would use them, and keep them in your bee suit pocket, not in your car or at home. Our association had a member who took the desensitisation course, apparently successfully, but was later stung on the neck through his veil. He went to get his injector from his car, but passed out and fortunately woke up again on the ground near his car. Not a good situation.

Keep an eye on lit or hot smokers

Where there is a smoker, there could be a fire, and this can get out of control if not managed properly. We will cover this in the next article looking at smokers and fuel.

Understand the chemical hazards you may be exposed to

We have to say just a few things about chemicals in beekeeping. The first is to be careful to understand the hazards before use and

to use the recommended protective equipment. The second is to be extremely sceptical about any recommendations for chemical usage in old beekeeping books. For example, the famous 'Frow' mixture for treating acarine is extremely toxic. When consideration was being given to an updated version of Wedmore's 1945 book, *A Manual of Beekeeping*, the editor of the sections on chemicals, a qualified scientist who is also an experienced beekeeper, concluded that every single section for chemical usage did not conform to modern/up-to-date safety regulations. See *BBKA News* April 2013 for an article on CLP regulations.



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Bee Pests: Rodents

By Richard Ball, Devon BKA, Retired National Bee Inspector

Several rodent species are honey bee pests. Their jaws have evolved to be very effective at gnawing, so present a real threat to bee equipment. As a general rule the biggest problems with rodents are caused by mice, in particular the house mouse, *Mus domesticus*, the harvest mouse, *Micromys minutus*, and the wood mouse or long-tailed field mouse, *Apodemus sylvaticus*. Mice cause beekeepers problems throughout the world, being reported in the UK, Soviet Union, USA, Australia, Hawaii, Ireland, Canada, Japan, India, South Africa and all other regions where bees are kept and managed. The biggest problems seem to arise where bees are located in fields or at the edges of forests. Mice become a problem in the winter as the first frosts occur. The bee colony forms a cluster, which it is unwilling to break in order to defend itself. This is due to its need to maintain a high core temperature in the bee nest in order to survive over winter. The mice enter unchallenged and build a nice warm, dry nest, which provides protection against stings. There is an abundance of food at hand, starting with pollen, then honey, and even the bees themselves. Death of the bee colony is a common occurrence, but for the beekeeper that is not the only problem as the mice chew the frames and comb, the remnants of which fall to the floor, the mice excrete onto them and often hive components become contaminated and unacceptable to bees. It is a common sign, when mice are in a hive, to see bits of comb outside the entrance. If the colony of bees survive, Langstroth considered that they often absconded because of the 'stench of contamination'.

If a hive is suspected of having a mouse nest inside, it is possible during cold weather, below about 4°C when the bees will remain clustered, to remove the roof and crown board and look down between the frames to see the nest. You may then carefully lift the brood box from the floor and place it on the upturned roof. This action usually disturbs the mice who run off. If the damaged combs are not part of the winter cluster they can be removed and replaced with frames of stores and the hive then reassembled having cleaned or replaced the floor. You must, however, then put in place suitable prevention measures.

Mouse protection

Prevention is better than cure so through the winter period it is important to ensure your colonies are mouse-proof. Make sure the hive is secure with no holes apart from the entrance. This must be made mouse-proof by ensuring that it is small enough to exclude mice but still large enough to give free egress and access for bees. I have used single bee-way height entrances across the hive, with no



Typical mouse nest in a brood box. Photo by Richard Ball.



Rat damage to a stored WBC hive. Photo by Richard Ball.

landing board and fifteen inches from the ground, throughout my beekeeping career and never had a mouse in my hives. If closer to the ground or if landing boards are present, checks should be made to ensure no one is gnawing around the entrance to gain entry. I trust this will not be my famous last words! An alternative solution, which is used by many beekeepers, is to pin mouse guards across the entrance. These are metal strips with holes punched in them which exclude mice. Any beekeeping supply merchant will stock them. Other alternatives are to place a metal queen excluder under the brood box or to pin strips of metal queen excluder material across the entrance. With the use of mouse guards or excluders, there is a risk of hive debris building up on the floor and blocking the entrance, so regular checks should be made for blockage and security.

Rats, squirrels, shews and moles

Rats, Muridae, and squirrels, Scluridae, are not seen as a problem with hived colonies as they find easy access difficult due to their size. ROB Manley, the famous inter-war bee farmer, observed rats removing loose entrance blocks, but did not find them entering hives and becoming a problem. However, as with squirrels, damage to stored bee equipment can be a problem with rats, so ensure the storage area is rodent-proof or at least ensure stacks are made as rodent-proof as possible and regular checks made. Many books advise the use of traps, but this is reported as not being very effective, which may be due to the fact that rats often occur in large groups.

Shrews, Soricidae, and moles, Talpidae, are somewhat similar in size to mice, but are not rodents. Moles are not reported to be a honey bee pest and I am only aware of one incidence of a mole being found in a beehive, which was in USA, with a weak though active colony. Shrews, mostly the pygmy shrew, *Sorex minutus*, and common shrew, *Sorex araneus*, are reported to eat bees, often dead ones at the entrance, but if they gain entry to a hive they will nest and take bees from the cluster. This causes major disturbance which presents a big threat to colony survival. Shrews are not as prone to causing damage to the combs and equipment as rodents are, but with prevention being the same as for mice, they should not pose a threat for the careful beekeeper. Please remember shrews are a protected species.

Transforming Lives Through Beekeeping in Rural Kenya

By Joseph Gitonga, John Kibui, Merioth Nduhiu, Bees Abroad Kenya



We hope you enjoy this article by our project delivery team in Kenya. English is their third language after their local or tribal language and Swahili, the national language of Kenya. It gives a perspective on beekeeping very different to ours.

**Richard Ridler,
Chair, Bees Abroad**

Unlike the UK where beekeeping is often a hobby, in Kenya and other African countries it is principally for family food, income and sometimes medicine. It is an activity that can easily be carried out by men and women of any age. It is also an ideal activity for groups such as women's groups, youth groups, men's groups, church groups etc. as an income-generating activity.

Although beekeeping is an old practice in Kenya and other developing countries, the last fifteen years has seen an increase in awareness and benefits of beekeeping. The emphasis has been on adoption of modern beekeeping with an aim of increasing household incomes and food security. Initiatives to develop beekeeping have overcome some of the traditional taboos, where women in some communities in Kenya are not highly active in beekeeping, a role that was predominantly a male domain.

The potential of beekeeping to mitigate economic hardship cannot be overemphasised. Beekeeping can significantly contribute to household poverty reduction if well managed. As well as honey, beekeepers have diversified their

income to include other hive products such as beauty products like face and hand creams, medicinal products and household wax products.

In line with the internationally agreed Sustainable Development Goal 1 on ending poverty in all its forms everywhere, Bees Abroad has been supporting beekeeping activities in Kenya since the early 2000s. This has been achieved through supporting group projects and the implementation of one major project entitled: 'The Bee Products Enterprise Development Project', from 2013–2016 in partnership with its in-country implementing partner, known as the Centre for Research and Advocacy in Human Rights (CERA Rights). The project resulted to 1,240 households benefiting from training in modern beekeeping, increased production and sale of hive products, business development, as well as development of beeswax and honey value-added products. Currently Bees Abroad is supporting nine group projects spread across Kenya and at various stages of development. From support provided in the past, there are testimonies of benefits from beneficiaries. Take for instance the case of Merioth Nduhiu. Merioth used to operate a small honey outlet in Nanyuki town. In 2013, Bees Abroad recruited her as one of the staff under the Bee Products Enterprise Development Project and took her for value-addition training at the National Beekeeping Institute in Nairobi. She was then engaged in training community groups on value-added products from the hive. Although the project engagement lasted for only three and a half years, the experience gained through the exposure provided by Bees Abroad and its in-country implementing partner saw her adopt the training and she has since then expanded her business tremendously. Initially, she had a monthly sale turnover of Kshs 20,000 (£160) but with the intervention of Bees Abroad, her business now has a monthly sales turnover of more than Kshs 50,000 (£400). In the recent past, Merioth has also ventured into offering beekeeping consultancy to private



Merioth outside her business base in Kenya. Photos courtesy of Bees Abroad.

beekeepers, an initiative that she says has contributed greatly towards supplementing the household income. She has also registered a honey trading business under the trade name 'NOMO Honey' in order to offer the consultancy services as well as the selling of hive products and assorted beekeeping equipment. This is just one example of individuals' lives being transformed through managing a sustainable business.

Another example is the case of Africa Inland Church (AIC) Cheptebo Rural Development Centre. The centre is a farmers' training institute located in the beautiful southern Kerio Valley, in Elgeyo Marakwet County of Kenya. It is a programme of AIC, whose mission is to serve the local community by encouraging appropriate and sustainable development through Christian-based, holistic development activities.

Bees Abroad has been supporting beekeeping activities at AIC for several years. In 2017, financial support from the UK Worshipful Company of Wax Chandlers was used to establish a training apiary with fourteen top bar hives and two log hives, together with additional beekeeping equipment. Three staff members were sponsored to undertake a 'train the trainer' course at the National Beekeeping Station in making their own hive products which include bees wax creams, candles and soaps. They are also packaging their own processed honey, as well as providing a market for honey from the neighbouring communities. A significant transformation is that through the initiative and support from Bees Abroad, the centre introduced beekeeping as a training module for the farmers who take up short-term courses at the institute. The module which covers basics on beekeeping values has since been delivered to over 1,000 farmers. This has resulted in increased interest as well as adoption of beekeeping as an enterprise enabling them to supplement their primary sources of



Africa Inland Church Cheptebo Rural Development Centre, Elgeyo Marakwet in Kenya.

household livelihood, thus contributing towards alleviating household poverty.

Sinyati Women's group is yet another example of the successful transformation of lives through beekeeping among the rural folks. The group was funded in 1997 to fight for the rights of women and girls among the marginalized and minority Ilchamus community of less than 50,000 people. Located in the semi-arid area around Lake Baringo in Margat District of Baringo County Kenya, the Ilchamus are sedentary pastoralist, where patriarchy is quite enshrined. Faced with aridity and recurrent droughts, the men in this community were said to normally migrate with their livestock in search of pastures during the dry spell leaving behind women and children. This meant adverse de-stabilisation of the household livelihood during such times with the coping mechanism being in charcoal burning. With this background in mind, in 2010 Bees Abroad initiated a beekeeping project to support the vulnerable women and children. The project provided training as well as basic beekeeping equipment. The twenty women trained on the various modes of the beekeeping, readily adopted the training offered and immediately embarked on establishing an apiary. After a period of about six months, the women's group had their first crop, and they have not looked back. Since the group is made up of women only, initially they relied on their male counterparts to harvest the honey for them resulting in loss of honey harvest. They then made a decision to harvest the honey by themselves. In order to do so, they had to apply some lessons learnt through Bees Abroad on making of bee suits using maize sacks. The group then embarked on processing of hive products, value added products such as body creams, lip balms and propolis medicinal supplements among others. With continuous mentoring from the Bees Abroad in-country partner and staff, the group can be said to have 'gotten wings to fly' and has since partnered with various organisations in expanding their business as well as initiation of new projects.

Although these are but a few cases, the work of Bees Abroad in transforming lives in rural Kenya cannot be understated. Having successfully completed seven projects and currently supporting nine ongoing projects there are so many untold stories of success. This success can nonetheless not be fully attributed to Bees Abroad alone. There are many partners, both corporates and individuals, who have been behind the scene contributing their finances through grants and purchase of Bees Abroad products at shows and exhibitions. This contribution is highly appreciated and the assurance is that it has always gone towards a worthwhile cause, not only in Kenya but in other countries of Africa where Bees Abroad is present.

This year Bees Abroad is celebrating its 21st anniversary. We depend on the contributions of generous beekeepers and BKAs to continue this work. To support us and find out more visit www.beesabroad.org.uk or email info@beesabroad.org.uk

Time for a Good Read

For those beekeepers' 'essentials' visit the BBKA web shop







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On the Bookshelf...



Reviewed by Bridget Knutson, Master Beekeeper, Somerset BKA

Book Facts

The Book: Bee Space to Bee Hive:
Looking at hives, beekeeping
equipment and beekeeping
methods.

Authors: Andrew Gibb & Ann Harman

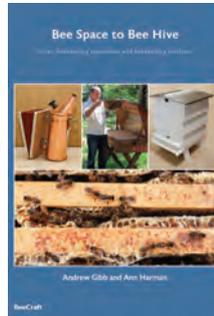
Year of publication: 2020

Number of pages: 168

Softback: ISBN: 978-0-900147-173

Cost: £25 (£40 for both)

Published by: BeeCraft



The Book: Bee Hive to Beekeeper:
Bees, beekeeping
organisations, authors and
research

Authors: Andrew Gibb & Ann Harman

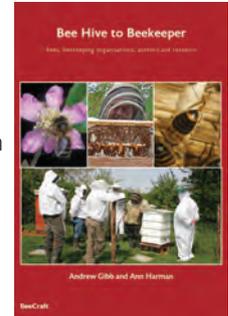
Year of publication: 2020

Number of pages: 176

Softback: ISBN: 978-0-900147-203

Cost: £25 (£40 for both)

Published by: BeeCraft



The 'Blue Book'

How many of us have wondered how it all began, the change from skeps to beehives, from killing bees to get the honey to keeping them alive over winter, and who started it? The Blue Book is a chronological history of beehives, equipment and methods. The first hive was invented by a blind beekeeper, Francois Huber, in 1789, and they continue to develop, as seen, for example, with the Beehaus. Knowledge was gained from the work of Lorenzo Lorraine Langstroth in 1852 (remember that name if you are planning on taking module 8), who realised that bee space needed to be throughout the hive, not just the frames. Bee space had been discovered several centuries earlier, but no one had paid much attention to it, except wondering why the bees did not do what was wanted. Langstroth was not the only beekeeper to experiment with space, although his was bee space. Dadant also experimented with space, realising queens did not lay as much in small hives as they did in larger ones. He also realised the importance of providing room to store honey, so his first hives had sixteen brood frames.

The WBC (by 1890) was not the first hive to have an outer ring of wood; that accolade goes to the Stewarton Hive (1819), which I would like to see working as I cannot see how the windows would work. Straw has also been used to make a hive. Woodbury suggested wood for the summer and woven straw panels for the winter. Imagine transferring all your bees from one brood box to the other every spring and autumn. I am not surprised that it did not catch on!

In the end, Langstroth and Dadant became the most popular hives in the USA, and the WBC and British National in the UK. Although nowadays there is plenty of choice in both countries.

We are told nowadays that local queens are best but that does not stop us importing what might be considered a better queen and this is not a new idea either. The first records of queens being imported into the UK was in 1859 when Woodbury imported Ligurian, Italian queens from Switzerland, bred from them, then exported some to Australia, which survived 79 days at sea and arrived safely. Langstroth also imported Italian queens into the USA in 1860.

Just before I received this book a group of us were discussing foundation and extractors, and which came first. If I had had this book I could have easily answered the questions with dates and inventors: Mehring 1857, Hruschka 1865, respectively. This book

gives pictures of the first extractors and the first smokers. Smokers have not changed much. Originally, sections were produced and sold, liquid honey being produced only after foundation was invented and then extractors. Nowadays, sections are said to be more difficult to make, and extracting from frames of honey, easier. The book also discusses queen excluders, Porter bee escapes, two queen systems, swarm controls, disease and comb changing.

The 'Red Book'

The Red Book goes into the introduction of bee strains into the UK, important organisations, research areas and influential authors. We all know about Buckfast and Brother Adam, and I expect most have heard of Ligustica and Carniolan bees, but what about Cyprian? We also know of Colin Butler, but what about James Simpson? EH Thorne, but where does Thomas Bates Blow fit? He had the first beehive works producing WBC hives and skeps. He also, with Revd Herbert Peel, founded the Hertfordshire BKA in 1878 and they were one of three county associations to be admitted to the BBKA as members in 1879. The BBKA was founded by some familiar names, Charles Nash Abbott, Thomas William Cowan and Frank Richard Cheshire. It was while reading this volume I realised that the same names had a major hand in the development of hives, space, journals, publications, organisations and research. By the time you have read the Red Book, you will also be familiar with the founding of the BBKA, IBRA, BIBBA and the BBJ. You will also know about mating outside the hive, parthenogenesis, bee behaviour, pheromones, swarming and spring feeding. There is a whole list of influential authors, and having these all listed in one volume with details of their work saves a lot of looking in other books. These books are really written for those taking module 8, and cover everything you need to know for the history part very well. I wish I had had them when I took my exam; I would have had the information all in one place. If you want to read them for the history then look up skep beekeeping first, as some of the information will then make more sense to you.



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Weighing a Hive

By Malcolm Blake, Somerset BKA

The survival of honey bee colonies from one year to the next depends on many factors, including colony food supply during September to April. This article describes a method that decreases the chances of colony starvation because it removes the guesswork associated with quantifying a colony's stored food (honey and/or sugar syrup). It is quick to use, more accurate than hefting, does not disturb the brood chamber and is best described as 'hive weighing'. It can be used at any time between the removal of supers in August and the spring inspection in April.

The method uses the following formula:
Weight of stored food = Weight of hive – (Weight of hive components + Weight of pollen in combs + Weight of bee colony).

My Jumbo Langstroth hives overwinter with: a floor and entrance block, a brood chamber with nine frames and a dummy board, a crown board and a roof. The total weight of these items

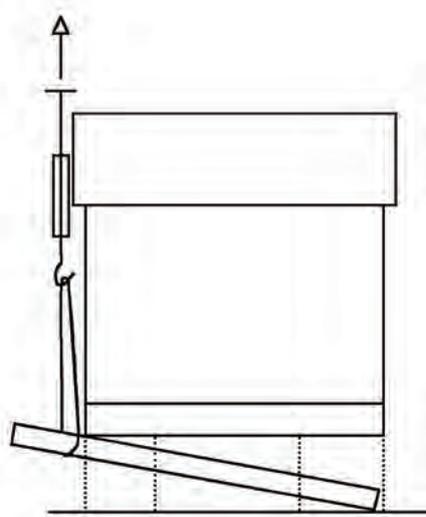


Diagram of a hive being lifted and weighed using a spring balance attached to a batten, by Malcolm Blake.

with drawn but empty comb in the frames is 33 lbs. If I estimate the weight of 9,000 bees to be 3 lbs and the weight of pollen in occupied combs to be 4 lbs, this gives a figure of 40 lbs for an overwintered hive and its occupying colony. If I now weigh an occupied hive in the apiary and find it weighs 75 lbs, use of the above formula tells me that the amount of stored honey/sugar syrup must be 35 lbs. Provided I know the weight of an occupied hive I can now assess the quantity of food (honey/syrup) it contains at any time after super removal and spring inspection.

Weighing an occupied hive is similar to hefting but a spring balance is used between the hand and the base of the hive. When the hive is lifted, the balance will indicate half the weight of the occupied hive, lifting on the other side provides another reading. Summing the two readings gives the weight of the

occupied hive. In practice, lifting on one side and then doubling the reading usually produces a similar figure. The spring balance that I use has a handle at the top and a hook below the indicator and scale. Positioning the hook underneath the rear of the floor makes lifting awkward at best and it is impossible to lift and read the balance at the same time. Therefore, I position a 1 inch square and 24 inch long wooden batten centrally underneath the hive and then connect a loop of strong cord between the balance hook and the protruding batten. Lifting the balance handle tightens the loop of cord on the batten and when the hive just starts to lift, the balance reading is taken. Modifying each floor to provide a hook/knob for the cord would work just as well. Use of the cord, of a suitable length, makes it easy to lift the hive and to read the balance scale. The diagram shows the side view of a hive being weighed from the rear. The blocks, four in total) that the hive rests on are shown dotted in order to more clearly show the position of the batten.

When this weighing method is most useful

The main periods of use of the method are:

- **September**, to ensure all colonies have 40 lbs of food by the end of the month.
- **February to spring inspection**, to ensure that no colony ever has less than 10 lbs of food.

Checklist: what you will need to set up

To put this method into use you will need to: identify the weight of your hive components for your overwintering configuration, decide on estimates for the weight of stored pollen and for the occupying bees, obtain a spring balance and devise a method of attaching it to your hives. I am able to weigh ten hives in as many minutes and, therefore, know very quickly which need help and how much help they need. It is without doubt quicker and more accurate than any other method I have used or heard about. I have used it for thirty years and have yet to starve a colony to death. I commend this method to you.

Beautiful gifts

"They send the best bee-themed hampers!" Martha Kearney, BBC R4 Today

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Bees for Development

Readers' Questions Answered

By David Evans, Professor of Virology, University of St. Andrews

Q: *Laying workers; are there any other options other than tipping them out at the bottom of the garden and seeing what happens? David Evans gives some guidance on this and other questions.*

Laying workers occur in queenless and broodless colonies. Under these conditions, egg laying by the unfertilized worker bees can start, resulting in comb containing drone larvae/pupae being reared in worker cells. A drone-laying queen generally lays concentric circles of drone brood in worker cells in contrast to laying workers where the drone brood is randomly scattered throughout the hive. In addition, examination of cells containing eggs shows that laying workers usually lay multiple eggs per cell, many of which are on the side walls rather than being located centrally at the bottom of the cell. These are important distinctions as the solution to these broadly similar problems is very different.



Typical comb from laying workers.

All images courtesy of www.theapiarist.org

A colony containing laying workers 'thinks' it is queenright. Directly requeening the colony is almost bound to fail and result in the introduced queen being killed. The often-made suggestion to shake them out at the bottom of the garden is based on the incorrect premise that laying workers cannot fly. They can. To test this, in a hive containing laying workers, replace a central frame with new drawn worker brood comb. Shake all the bees out and inspect the comb the following day. It will contain multiple eggs per cell. I will return to this shortly.

Since laying workers arise due to the absence of brood pheromone, the successive addition of three or four frames of open brood to a hive containing laying workers can suppress the activity and allow the colony either to be directly requeened, or to rear a new queen



Multiple eggs per cell.

from a young larva. However, this is a resource-intensive solution. Those frames of open brood would probably be better left in strong colonies. There is no guarantee that this approach will succeed and, although I have done it successfully, I think it is a waste of bees at a critical time in the season.

Although shaking laying workers out does not remove them entirely from the hive, I do think it significantly reduces their numbers. I cannot discriminate between a reduced number of laying workers, or the same number laying fewer eggs. However, I have had some success with the following approach. I move the laying worker colony a short distance away and set up a fresh hive containing some stores and some drawn comb. I add one frame of eggs with lots of young larvae to this hive. You can use a nucleus colony for this hive unless the laying worker colony is really strong. I then shake out the laying workers 20–30 metres away and let those that can return to the hive on the original site. Two to three days later I check the single frame of eggs/larvae that I added. If they have started drawing queen cells then the colony should be OK. There is little chance that they will swarm but I usually reduce the cells to leave them one good charged cell and cross my fingers that the queen mates promptly. If there are no queen cells after three days I remove the hive entirely and shake the bees out in front of other strong colonies. Laying workers often occur a few weeks after the end of the swarming season due to failed queen mating. By that stage of the season the colony is unlikely to generate any honey and may not build up strongly enough to overwinter.

Q: *Why is it that bees can live longer in the winter? I understand that they are saving energy/their wings as they are not flying but it must be more than that.*

The bees that maintain the colony through the cold, dark months of a temperate winter are very different from the foragers that collect kilograms of nectar during midsummer. But, interestingly, they are not very different from the young nurse bees that develop into summer foragers. The physiology of nurse bees and winter bees shows some remarkable similarities. Both have low levels of juvenile hormone and high levels of vitellogenin. Both also have high levels of haemolymph proteins and enlarged hypopharyngeal glands. The key difference is that the nurse bees mature into foragers after two to three weeks, whereas the winter bees effectively stay 'forever young' for months.

There are a complex series of triggers that induce winter bee production. These include a reduction in the level of brood pheromone in the colony, which results in the slowed behavioural maturation of the young bees, thereby converting them into the diutinus (long-lived) winter bees. As cooler weather and reduced daylight limits foraging the numbers of hive-bound foragers increase and these also produce a pheromone that slows the maturation of young bees. Our understanding of winter bees is still incomplete. Genetically, they are the same as the foragers in the hive. However, evidence suggests that there are so-called epigenetic changes that alter the genes expressed in winter bees, so adapting them to their role.



Clustered, long-lived winter bees, under an insulated crown board.

They might be saving their wings, but they are not necessarily saving their energy. The winter bees have a critical role in thermoregulating the winter colony. In the absence of brood-rearing the cluster core is maintained at ~18°C, whatever the external temperature. However, when brood-rearing starts in very late November or early/mid-December the cluster core temperature must be raised to ~35°C. The bees achieve this by isometric flexing of their flight muscles, essentially simultaneously contracting the muscles that move the wings up and down, without moving their wings. All this takes energy, which is why colonies that start brood-rearing use up their stores much faster in January and February than in October and November.

A sustainable future for our beekeepers, our honey bees and our environment.

A National Bee Improvement Programme (NatBIP) is being launched.

BIBBA aims to support associations, groups and beekeepers of all levels to sustainably select and produce hardy, docile and productive bees that are best suited to their local environment.

To find out more free information and gain access to recent webinars, please register your interest at

bibba.com/news



Absconding revisited

In *BBKA News* Q&A last month I answered a question on the distinction between absconding and swarming. In retrospect, I realised I could have provided a more complete response by indicating the differences between honey bees kept in temperate climates and those in tropical regions. My answer, on swarms disappearing after being hived or on mini-nuclei going AWOL, referred to temperate regions. In the tropics, honey bees, both Africanised honey bees and other *Apis* species, abscond during periods when there is a dearth of nectar, pollen or water. This could also be viewed as seasonal migration, where the colony empties the hive of pollen and nectar, and moves elsewhere. Unlike swarms that preferentially relocate just a few hundred metres away from the originating colony, an absconding colony can move up to 160 km, interrupting the journey to forage until a new nest site in a suitable area is found. There is evidence that scout bees survey up to 16 km from the hive before the colony leaves i.e. considerably more than the usual foraging range. The proportion of colonies that abscond each season varies (30–100%) and this obviously has a marked impact on beekeeping in tropical regions. Not something to concern most *BBKA* members, but a more complete answer to the original question.

ADM January 2021

Nominations for the Executive Committee

There are four vacancies, each for three years.

Suzanne Bennett
John Hendrie
Jenny Morgan
Howard Pool

Nominations for the Examinations Board

There are three vacancies, each for three years and two vacancies for two years.

Shirley Bond
Julie Coleman
Andrew Gibb

For more information, CVs for those nominated have been sent to your area association secretary and ADM delegate.

Proposition 1 – BBKA Board of Trustees

That all references to 'Year Book' in the BBKA Constitution be replaced with 'Directory of Officers'.

Proposition 2 – BBKA Board of Trustees

That clause 10.4.3 of the BBKA constitution be amended as follows:

Clause 10.4.3 Compulsory Termination of Membership (or lesser sanction) be amended to:

a) If, in the reasonable opinion of the Trustees, an AAM or Specialist member commits a serious breach of this constitution or behaves in a manner unbecoming such a member the EC shall be empowered to create and implement a process which will involve the determination of all relevant issues by an arbitrator and which will result in an Arbitrators report: that process shall then (if adopted at an ADM thereafter) form Annex C. The Arbitrators report shall be presented to a Delegate meeting for ratification and if accepted by a two thirds majority of the votes cast the expulsion or lesser sanction shall be applied.

Proposition 3 – BBKA Board of Trustees

That clause 30.1 (a) (i) of the BBKA constitution be amended as follows:

Clause 30.1 (a) (i) Voluntary winding up or dissolution be amended to:

(i) by a resolution passed by a 75% majority of the votes cast, or ...

Proposition 4 – BBKA Board of Trustees

That for administrative efficiency, given the ADM is being held virtually, the pre meeting election of trustees and examination board members be accepted as a substitute for a vote at the ADM and the results of this election be taken as a valid vote.

Proposition 5 – BBKA Board of Trustees

With effect from 1st October 2021 capitation rates be increased as follows: Registered Member £21 (currently £19), Partner Member £13.50 (£12.50), Country Member £10.00 (£9.50), School Member £21 (£19). Junior Member to remain at £9.50. Individual Membership of BBKA to increase from £36 to £40.

Proposition 6 – West Sussex BKA

If a proxy is appointed by an AAM to represent them at a BBKA delegate meeting the proxy must be one of the attending AAM delegates. A delegate to be limited to holding one proxy.

The BBKA constitution to be amended as follows:

Annex (d) Proxy voting

1. (a) Any member as indicated in Annex A that is entitled to vote may appoint another person as a proxy to exercise all or any of that member's rights to attend, speak and vote at a general meeting of

BBKA. A proxy must be one of the attending delegates and no delegate to hold more than one proxy. Proxies must be appointed by a notice in writing (a "proxy notice") which:

Proposition 7 – Cleveland BKA

That the BBKA publishes, within 12 months, a report on the implementation of the Equality, Diversity and Inclusiveness Policy covering all aspects of the Association's work.

Proposition 8 – Suffolk BKA

The BBKA's Trustees have ultimate responsibility for all that the charity does; this includes the work of their Examinations Board. After working with the BBKA, we propose the wording of the CIO's constitution be amended to:

20. The Examinations Board

20.1 The purpose of the Examinations Board of BBKA is to manage the BBKA's Examinations and Assessments and maintain the necessary standards.

20.2 The Examinations Board shall comprise no fewer than three and no more than nine persons in addition to the Moderator and the Secretary. The EC may appoint ex-officio members to the Examinations Board.

20.3 The Examinations Board shall, at their first meeting following the ADM, appoint a Chairman and Moderator. The Secretary shall be appointed by the EC.

20.4 The Examinations Board shall have the following powers:

- (a) to set standards for BBKA qualifications;
- (b) to arrange all syllabi, examinations and assessments;
- (c) to manage the Examinations Procedures.

20.5 The Examinations Board shall operate independently of the EC except in respect of the following:

- (a) the expenditure of money beyond the amounts set out in the budget approved by the EC;
- (b) the determination of the Honoraria for the Examinations Board Officers.

20.6 (new clause) Nothing in clause 20.5 shall prevent the trustees from exercising their legal duties to manage the affairs of the CIO.

20.7 (formerly 20.6) Any issues of contention or dissatisfaction between the EC and the Examinations Board will be referred to the President of BBKA for a ruling which shall be final and binding. Should the President be a member of the Examinations Board the Chair will make a ruling.

Proposition 9 – Surrey BKA

That no change is made to the voting system to be employed at ADMs until and before full and robust rules to control and regulate applications by new or breakaway groups of members to become Area Association Members are laid down and further that those rules are accepted by a formal vote at an ADM.

Proposition 10a – BBKA Board of Trustees

That the Guidelines for Admission of a new Area Association Member Version 7 28-07-20 be adopted and implemented by BBKA Trustees:

Whilst the trustees can make minor adjustments to the desirable requirement from time to time, they are not able to make changes to the Mandatory requirement for admission without reference back to the ADM for delegate approval.

Proposition 10b – BBKA Board of Trustees

That clause 10.1.1 of the constitution be amended to read: Subject to the conditions set out in Clause 10.1 above any beekeeping association or federation may apply to join BBKA. Membership will be granted by the trustees at a duly convened trustee meeting provided that the applicant has satisfied the rules for admission as set in out in Appendix [E].

That appendix [A] is amended to reflect the revised admission procedure.
That a new Appendix [E] detailing the rules, will be added to the constitution.

Proposition 11- BBKA Board of Trustees

That the following clauses of the BBKA constitution be amended as follows:

Clause 12.6 Voting at Delegate Meetings be replaced with:

12.6 Voting at Delegate meetings

(a) Any decision other than one falling within clause 11.2 (decisions that must be taken in a particular way) shall be taken by a simple majority of votes cast at the meeting. Every Delegate has a number of votes calculated using the Weighted Average Method (as defined in Standing Orders) unless otherwise provided in the rights of a particular class of membership under this constitution. Proxy voting is permitted subject to the provisions of Annex (d). Postal voting is not permitted.

(b) A resolution put to the vote of a meeting shall be decided using an electronic voting system, unless this is unavailable in which case a poll (poll card vote) shall be taken, or if the meeting decides that a poll card vote should be taken.

(c) A poll demanded on the election of a person to Chair the meeting or on a question of adjournment must be taken immediately. A poll on any other matter shall be taken, and the result of the poll shall be announced, in such manner as the Chair of the meeting shall decide, provided that the poll must be taken, and the result of the poll announced, within 30 days of the demand for the poll.

(d) A poll may be taken:

- (i) at the meeting at which it was demanded; or
- (ii) at some other time and place and in such manner specified by the Chair.

(e) Any objection to the qualification of any voter must be raised at the meeting at which the vote is cast and the decision of the Chair

of the meeting shall be final.

That a new clause be inserted into Section 31 Interpretation of the BBKA Constitution as follows:

'Weighted Average Method' means $100 \times \sqrt{(X/Y)}$ [100 times the square root of (X divided by Y)] where X is the number of registered and partner members recorded on the BBKA membership system 14 days prior to the date of the ADM of the AAM, and Y is the number of registered and partner members recorded on the BBKA membership system 14 days prior to the ADM of the AAM with the largest number of members.

The number of votes thus calculated to be published 7 days prior to the ADM.

The Trustees are then mandated to undertake a review of the above changes to the constitution to be presented to the 2025 ADM – so allowing 3 years of their operation. This review to consider and recommend one of the following options:

- That the new arrangements have proved satisfactory and should be retained.
- That the new arrangements have not proved satisfactory and either:
 - o The voting arrangements should revert back to those in place at the 2021 ADM or
 - o An alternative voting arrangement is proposed.

Whilst not strictly required for Trustee Propositions, the EC are pleased that Yorkshire BKA, the largest association, and Newcastle BKA, one of the smallest, have agreed to second this proposition.

Proposition 12 –Thanet BKA

Future Delegate Meetings to be held via video conferencing e.g. zoom as well as in person.

For more information, supporting notes for the propositions have been sent to your area association secretary and ADM delegate. The full ADM pack is available on the BBKA website.



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Diary Dates 2021

13 February. Somerset BKA Lecture Day, will be replaced by a single lecture on Zoom. Details to be confirmed. Follow SBKA on Eventbrite: <https://www.eventbrite.co.uk/o/somerset-beekeepers-association-30125675834>.

16–18 April. Spring Convention – event arrangements to be announced.

5–9 July. International Meeting of Young Beekeepers. Slovenia.

The IMYB event in Russia will be postponed from 2021 to 2022 (further details tbc).

30 August–4 September. Beekeeping trip to Slovenia. Penrith BKA invites you to join them on an excursion to Ljubljana, the 'Beekeeping Capital of Europe'. Reservations closing date: 31 December 2020. Details: mr4cnr@gmail.com

21–23 October. National Honey Show at Sandown Park, Esher.

Your Letters

Can You Spare a Little Honey?

Who would have thought, this time last year, that 2020 would be so challenging? Even before the COVID-19 pandemic took hold, many communities had established food banks and similar groups helping to support those in need to feed themselves and their families. These groups have become a lifeline to many and, as we face what will undoubtedly be a very difficult winter, the work these voluntary groups do will be more important than ever. The group in my area partners with local supermarkets and others to collect and distribute surplus food. They have also had help from local chefs and guest house owners, among others, who have batch-cooked meals for freezing and distribution as needed. This has enabled them to supplement the surplus items they distribute with some healthy, home-cooked complete meals, made from ingredients which would otherwise have gone to waste.

My local group is hoping to put together some Christmas hampers to spread a little Christmas cheer at what can be a very tough time of year for many, even in normal times. While doing my honey extraction, even later than usual, it occurred to me that some small jars of honey would make a welcome addition to those Christmas hampers. I made contact with the group, got a very quick: "Oh yes please" response and will be delivering the jars in time for them to be added to the Christmas hampers.

There will have been few honey shows this year, so the customary 'gift class' included in many show schedules will have meant that honey donations to local causes may not have happened.

Can I therefore ask you all to consider donating a few jars of your wonderful honey to a food bank or other local cause? Our bees and beekeeping give us so much pleasure and it would be wonderful to share a little of our golden harvest to help bring some joy to what I suspect will be a rather strange festive season.

Caroline Mullinex, BBKA Individual Member, North Wales

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