Brighton & Lewes Beekeepers Newsletter

Volume 12 – December 2018

Editor: Norman Dickinson

BRIGHTON AND LEWES DIVISION OF THE SUSSEX BEEKEEPERS ASSOCIATION

www.brightonlewesbeekeepers.co.uk

Seasons Greetings to all our Members

Winter meeting held on 21st November

Our last meeting of the year featured Master Beekeeper Pam Hunter, who gave a

Steve receiving his Basic Assessment certificate from Pam Hunter

facinating talk entitled "How Nutrition affects Colony Health". Before starting, Pam had the honour of presenting Steve Gibson with his Basic Assessment Certificate and badge, which he passed with a credit. Congratulations Steve.

Pam firstly explained that food is a source of nutrient required by all animals and that bees get their nutrients primarily from nectar and pollen. Carbohydrates, essential for providing energy and tissue building & repair comes from the nectar whilst pollen is required for brood food and young house bees. It was stressed that different pollens will provide a balanced diet for the bees. In terms of nectar to honey conversion, approximately 200Kg of nectar is required to produce 40Kg of honey, which is sufficient to sustain the colony for a year. In order to reduce the water content in the honey, the honey is passed from cell to cell allowing evaporation to occur. This also highlights the need to ensure ample space in the honey super is maintained at all times.

> *The very best queens will not be produced except under the very best conditions.*
> *A.L.Gregg*

An interested fact to emerge was that pollen degrades over time and looses a high percentage of its nutritional value.

Fat storage was very

Continued on Page 2

Letter from your Chairman

May I take this opportunity to thank all of the people who gave me samples of their honey for Rebecca to test. I collected 22 samples from Peacehaven to Burgess Hill and from Ditchling to Eastbourne; we were both surprised by your generosity.

Rebecca has recently messaged me with some preliminary results.

"*I've only played around with six of the samples so far, but most are looking like they have a strong antibacterial effect against staphylococcus epidermitis (It is part of the normal human flora, typically the skin flora, and less commonly the mucosal flora), including your honey. It's looking (that they are all) stronger than my Manuka sample!*"

This all looks promising, but probably nothing we didn't already know. I just wish we had the same publicity machine that NZ Manuka Honey had.

Many thanks again for everyone's support and I will keep you informed

Ian White
Chair

Inside this issue:

Forthcoming winter meetings:

- *There will be no meeting in December*
- *16th January 2018 @ 7:00pm*
- *20th February @ 7:00pm*
- *20th March @ 7:00pm*

Continued from Page 1

important with regards to the over-wintering bee, as the fat needs to sustain the bee for anything up to 6 months over the winter period.

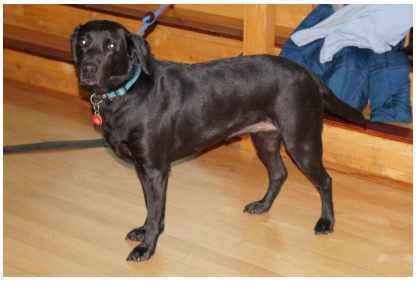
B&L at members at Question Time

The nutritional condition of the colony has a huge impact on the bees and the ability of the queen to produce good offspring. It follows that they must have an adequate supply of nectar, and pollen and ideally, many different types of pollen. Studies have shown that the lifespan of the bee can be influenced by the quality of the pollen brought in, and remarkably, sunflower pollen does not increase lifespan even though the bees love it.

Reference was made several times to Fat Bees - Skinny Bees, an overview of honey bee nutrition, by the Australian Doug Somerville. This can be found at

https://beeassoc.files.wordpress.com/2016/08/somerville-1.pdf

and is well worth a visit. I have also attached a PDF copy with the newsletter covering email - Ed



Pam's Labrador Poppy at the meeting

SBKA Annual Convention 2018

The 2018 SBKA Annual Convention was once again held at the Uckfield Civic on Saturday, 3rd November, which was about 3 weeks earlier than on previous years. The attendance this year was slightly up on last years Convention, with approximately 48 members from across the region eagerly taking in the lectures from our five speakers.

Karin Alton opened the Convention with her talk entitled "How to Improve your Green Spaces for Bees and Other Pollinators" She explained that over the Millenia, pollinators and plants had evolved in a symbiotic relationship to benefit both. The honey bee physiology in particular evolved to enable it to navigate using the sun's position, this being particularly essential enabling the bee to find it's way back to the hive having been out foraging for anything up to 3Km away. The bee can also rely on odours given out by the plants and the sense of smell is in the region of 40 time more sensitive than humans.

Once on the plant, the bee will "taste" the nectar and will have a preference for nectars with a 30% plus sugar content. Generally, they will limit themselves to foraging only on one particular plant but can visit up to 40 flowers per hour. Depending on the distance from the hive, the bee will make between 5 and 15 trips per day to collect nectar but only 3 to 8 trips to collect pollen. Temperature wise, it prefers to fly when the temperature is between 16'C and 30'C.

The decline of invertebrate species is greater in the UK than in the majority of other countries, where we are ranked 189 out of 218. Not good news at all! Changes in agriculture, urbanisation, climate change and wild fires all contribute to this decline. Gardens and green spaces in urban areas are helping to offset the decline and provide between 22% and 27% of all forage for bees, and Jenifer Owen, who gardens for wildlife has found up to 20 new species if insect during her 30 year study. There is an article about her study in the Independent newspaper at https://www.independent.co.uk/environment/nature/me-and-my-garden-how-jennifer-owen-became-an-unlikely-champion-of-british-wildlife-2131712.html

An experimental garden had been created at LSAI, on the University of Sussex campus using bee and pollinator friendly plants, which was so successful that additional gardens have now been created and are greatly valued by the students.

A survey carried out in 6 garden centres has highlighted the fact there are a large number of plants being sold, predominantly annual bedding, that have no benefit for bees and pollinators. It has also emerged that plant labelling could be improved as there were plants clearly attractive to bees that were not labelled as "bee friendly".

Local authorities spend an inordinately large amount of money on bedding plants which whilst they may look pretty they do not help our pollinators.

> *"The decline of invertebrate species is greater in the UK than in the majority of other countries"*

After the tea/coffee break, and following on from his talk at last years Convention, Dr. John Feltwell gave a well informed update on the invasive progress of the Asian Hornet in the UK. So far this year there had been 6 known sightings, the first being in Lancashire on the 13th April. Four were then spotted in September and the remaining one spotted in October. The last five locations are in xxx on 3rd September, Hull on 10th September, surrey on 27th September, xxx on 28th September and finally in Kent on 17th October. John reasons that the sightings in September and October may be as a result of reduced

tree foliage making the nests more visible. The key message from John was that we all need to be vigilant and report all sighting via the various Defra and Government websites.

Our SBKA Chairman, Pat Clowser made an appeal after John's talk for all Divisions to set-up task forces to deal with the Asian Hornet threat, including putting out posters at local shops and supermarkets informing the general public what to do if they spot the AH. Posters are available from Pat Clowser.

A map on the BBKA website details all sightings so far in the UK, including those subsequent to John's talk. https://www.bbka.org.uk/asian-hornet-map

Christine Stevens was the last speaker before lunch, the subject being "Honey Handling from Hive to Jar". Christine is a member of the Chichester Beekeepers, a Division of the West Sussex Beekeepers (WSBKA), where she wears several "hats" including being part of the Training Team, Website Manager and WSBKA Convention Organiser.

"Remember, as the supplier of the bottled honey it is your responsibility to comply with the law"

Christine started beekeeping in 1995 and until she became allergic to the bee sting she and her husband had 40+ hives, mainly on the Goodwood Estate where the bulk of her honey was sold.

A key principle reiterated by Christine many times was that no matter whether one sells, gives away or keeps for personal use the honey harvest it must be of the best quality possible.

Combs of honey taken of should be fully capped, oil seed rape (OSR) being a possible exception and must be ripe otherwise it may ferment and spoil. Do always remember to leave some for the bees otherwise there is a risk of summer starvation!

Each beekeeper will have their own preference for clearing the bees and Christine detailed several clearer boards that she had used in the past. When full supers are taken off you must replace with empty ones in order to give the bees an equal amount of space to go in to. Generally, she would only take off one super at a time. Another key element is to label each super and frames with the hive number, thus ensuring any possible disease is not transferred from one hive to another.

Remember that we are essentially handling food for human consumption, so ensure all hygiene precautions are taken, and it would be preferable for beekeepers to take a food handling hygiene course to get the necessary certificate, which is time stamped and will need to be renewed. Ideally, wear white coat or apron, gloves and some form of hair net / hat for those with long hair during all stages of honey handling.

When uncapping, extracting, filtering and bottling, keep all pets out of the area and all windows / doors closed or fit insect screens to keep bees & wasps away. To prevent any sticky mess, clean up all spills as you work and use the shortest path from uncapped frames to extractor. Use progressively finer filters when processing the honey, ending with a 200um (micron) filter. Christine's advise is to store honey on tanks rather than in jars, as this make re-processing much easier, if needed.

The styles of jars are endless and the ones chosen will be influenced by the Client. Glass is always preferable, which can be re-used (recycled) if the user is known. Under no circumstances should lids be re-used. When deciding on the label design, make sure that you do not put incorrect information on it, and always ensure that it conforms to the latest food labelling regulations. Remember, as the supplier of the bottled honey it is your responsibility to comply with the law.

Clive de Bruyn is a member of the Essex Beekeepers Association and has been a beekeeper since the 1960's. He runs over 100 colonies for queen rearing, honey production and pollination and is the Education Officer for the Bee Farmers Association.

His lecture subject was "Maintaining Healthy Bees" and in his opening address he stated that he will not be mentioning the various medicines and chemical available, rather the emphasis would be on the environment that the bees are kept in.

A key element of beekeeping is the word "knowledge". It is knowing the lifecycle of the bee, how we manage them, what do we look for when we inspect the hive, what is normal and abnormal. Do they have space to expand, have they enough stores, i.e. nectar and pollen, and how to reduce swarming, none of us will ever prevent it happening!

Tips were given on cleaning up our boxes and frames, best way to use the hot water boiler and how Acetic Acid fumigation of component have parts will destroy wax moth eggs and larvae.

If you do decide to buy either a nucleus or complete hive of bees, ensure that a bee inspector has issued a certificate unless you are absolutely certain of their origin.

When inspecting your hive it is imperative that you learn to read the comb, generally it's not what you might see but what you don't, look for the unusual, and if you need to treat for Varroa, only treat as is required not as a matter of course.

Christine has agreed to pass on her various findings, please contact Pat Clowser to be included on the distribution list

The final speaker of the day was John Hendrie on the subject of Queen Rearing.

John is a member of the Medway Beekeepers Association and their Treasurer and Membership Secretary. He is a past BBKA President, retiring from that role at the beginning of 2018 and is currently Secretary of the National Honey Show.

John made a very salient point stating that you should be producing new queens under your control and at your convenience and therefore can spend sufficient time to plan for the

production of new queens.

There are a number of conditions under which the bees will produce Q cells:-

- Crowded condition brood
- Over abundance of nurse bees creating an excess of royal jelly
- Comb building stimulated by nectar flow / feeding
- Good supply of pollen
- Low level or no queen substance, noting that Q pheromones suppress Q rearing

A number of slides were shown detailing the different Q cells and why they were being produced, i.e. swarm cells, supersedure cell, emergency cells.

The best time of year to raise new Q's is when there is good weather, plenty of nectar and pollen coming in and when there is an adequate supply of drones.

The Demaree method of swarm control was presented as one option where a new queen can be produced reasonably successfully. A number of other methods were suggested, which are readily available on the Intranet. (*The Demaree method is attached as a PDF file to the newsletter covering email Ed)*

More sophisticated methods of Q rearing including

- Grafting
- Jenter Method
- Cell Punching

were presented with a brief description of the grafting method.

John concluded by emphasising the need to use strong colonies, ensure you plan ahead, timing and pay particular attention to detail.

The Dark Side of the Hive: The Evolution of the Imperfect Honeybee

ROBIN CREWE AND ROBIN MORITZ

October 11th 2018, Oxford University Press

Honey bee colonies have historically been considered as marvels of evolution resulting in perfectly cooperative and harmonious societies, and exemplars of what we humans might achieve. This is an appealing image to many, but it is of course a caricature. Nobody is perfect, not even honey bees. As with any complex social system, honey bee societies are prone to error, robbery and social parasitism. Although there is only a single queen, the honey bee colony is composed of many subfamilies as the queen can mate with over 50 drones, using the sperm from all to produce offspring. The resulting web of subfamilies facilitates worker specialization, but also provides huge potential for intracolonial conflict.

Although efficient mechanisms are in place to prevent overt conflict among the subfamilies in the hive this is far from being perfect, and the apparently harmonious, cooperative whole has a considerable dark side. It is full of individual mistakes, obvious maladaptations and evolutionary dead ends. There is conflict, cheating, worker inefficiency, and unfair reproduction strategies.

The fact that honey bee colonies get by remarkably well in spite of many seemingly odd biological features is surprising. However, these "aberrations" are central to fully understanding the social organization of the colony.

Aberrations observed within colonies include:

• Fierce competition among the colony members using both physical force and chemical signalling where individual interests are often pursued at the expense of the colony, in some cases resulting in social parasitism. For example, Cape honeybee workers can invade foreign colonies to replace the native queen and take over the host colony. As these workers can produce female offspring that are also parasitic, the colony will eventually die as there are no workers to take care of the brood. The parasites need to find new host colonies in order to maintain the parasitic lineage.

• Honey bees have evolved risky, sub-optimal and seemingly maladaptive solutions to organizational problems compared to other closely related social bee species. Reproductive swarming behavior is an excellent example of such a high risk strategy. As the old queen swarms with half of the colony's worker force she needs to stall egg laying well before the actual swarming. This is important as she needs to decrease her ovary size to regain flight ability. Thus the colony has to suffer from a huge brood gap in the middle of the season when it actually seems more efficient to invest in a bigger colony size. In addition the swarm sets off without any clue where to find a new nesting site. Instead they fly off to the nearest tree branch to bivouac for several days before an appropriate nesting site has been identified and agreed upon by all members of the colony. Stingless bees show us how efficient swarming can be organized. The old queen stays in the nest and reproductive colony fission only starts once a new nesting site has been established. Workers then guide the newly mated queen to the new site when all is in place.

• Honey bees have a highly specific mode of sex determination controlled by a single gene (complementary sex determiner, or csd). When an individual is heterozygous at this locus it is a female, if it is hemizygous like the haploid drone it becomes a male. Diploid individuals that are homozygous at the sex allele become diploid males that are sterile and in honey bees cannibalized by the workers. This causes serious problems in inbred colonies as up to 50% of the brood will be diploid males if the queen mates with a drone that shares a sex allele with her. Clearly any genetic system with more than one locus would be much more adaptive since it would result in a much lower frequency of diploid drones.

• A clear example of a foraging failure is the robbery of bird seed from a bird feeder that we observed a few years ago. Honey bee workers recruited their nestmates to the feeder and numerous foragers were frantically rolling in the seed grains to fill their pollen basket on the hind legs (corbicula) with one seed each. This was achieved much faster than flying from flower to flower slowly filling the corbiculae with a pollen pellet. At the same time the birds were chased away as they were loath to confront the bees. Eventually the dish was emptied. Yet in the hive the drama must have been great because the bees cannot use the seed grains as food.

This is a lose-lose situation that is clearly maladaptive and one of the rare cases where innate behaviour can result in the reduction of the fitness of all the parties involved.

Honey bees are an exceptionally successful species with the ability to survive in the wild, in cities, in habitats from deserts to rainforests and even in beekeepers' boxes. They get by because they have adequate but not perfect skills, and as with all social insects, it is the large number of individuals in the colony that compensates for a lack of perfection.

Robin Moritz is Professor of Molecular Ecology at Martin-Luther-University of Halle-Wittenberg.

Robin Crewe is a Senior Research Fellow at the Centre for the Advancement of Scholarship, University of Pretoria.

Together they are the co-authors of The Dark Side of the Hive (OUP, 2018).

Article presented by Gerald Legg

Beekeeper Tuition

Heather will be holding 3 one day courses next year on Sat March 30, Sun March 31st & Tuesday April 2nd

The day will run 9-4pm. Coffee and tea provided but bring own lunch.

The first morning session will cover Bee biology, Types of hive and basic equipment needed to be followed by a coffee break.

The second session covers a year in the hive and swarm collecting before breaking for lunch.

After lunch will cover Diseases, Plants before candidates assemble outside to construct frames.

In the last session candidates will be shown how to light a smoker and will then have a hands on session handling bees, identifying eggs, larvae, capped brood, nectar / honey store and pollen. This will be followed by tea and Question Time.

Heathers contact details can be found on page 8.

Why do we hate wasps and love bees?

By Pallab Ghosh
Science correspondent, BBC News
19 September 2018

A new study reveals that wasps are largely disliked by the public, whereas bees are highly appreciated.

The researchers involved say that this view is unfair because wasps are just as ecologically useful as bees.

The scientists suggest a public relations campaign to restore the wasps' battered image.

They'd like to see the same efforts made to conserve them as there currently are with bees.

The survey of 750 people from 46 countries has been published in Ecological Entomology.

Despised by picnickers, feared for their painful stings - wasps are among the least loved of insects according to the new study.

In the survey, participants were asked to rate the insects on a scale which ran from minus five, representing a strongly negative emotion to plus five, representing a strongly positive one.

The vast majority of responses for bees were plus 3 or above, whereas it was the complete reverse for wasps, with the vast majority rating their feelings minus three or below.

When asked to think of words associated with bees, the most popular for bees were "honey", "flowers" and "pollination".

For wasps the most common words that came to mind were "sting", "annoying" and "dangerous".

However wasps also pollinate flowers as well as killing pests and are just as important to the environment as bees.

"A new study reveals that wasps are largely disliked by the public, whereas bees are highly appreciated."

The problem, according to Dr Seirian Sumner, of University College London, who led the research, is that wasps have had a bad press.

The public are unaware of all the good things they do so they are regarded as nuisances rather than an important ecological asset.

"People don't realise how incredibly valuable they are," she told BBC News.

"Although you might think they are after your beer or jam sandwich - they are, in fact, much more interested in finding insect prey to take back to their nest to feed their lavae."

Dr Sumner also discovered that there is a lack of research into the mostly positive impact wasps have on the environment.

She analysed scientific research papers and conference presentations for bees and wasps over the last 37 years and 16 years respectively.

Of 908 papers sampled, only 2.4% wasp publications were found since 1980, compared to 97.6% (886 papers) bee publications. Of the 2,543 conference abstracts on bees or wasps from the last twenty years, 81.3% were on bees.

This lack of research is stalling efforts to develop conservation strategies for wasps, whose numbers are declining because of loss of habitat and climate change according to Dr Alessandro Cini of the University of Florence, who collaborated on the study.

Thank you to Lionel Reuben for sending this article in.

Amanda Advises

I am looking forward to a quiet month on the bee front; I have cleaned and treated all my supers with acetic acid; still have piles of frames to clean but dare not tackle them until my RSI improves; and at this time of year sowing and planting for pollinators is mostly the armchair planning sort. On the

Three Red Admirals sunning themselves on the hive

few warm days we had earlier this month, I had 3 Red Admirals sunning themselves on one hive, but also loads of wasp's underneath. I don't have much in flower at the moment, but the Calendula and Wild wallflower are still attracting hoverflies.

They will not need any feeding yet awhile but I will need to keep an eye on the Apidea, which being so small does not have room to store much, also my only colony on one box which had 7 frames of brood in September and is now stuffed full of bees may get through more stores than I allowed for initially or would have fitted in one shallow box, although it felt very heavy today when I hefted it. The rest - as I know from lifting the super off to dust - are extremely heavy; I think they did well on the Ivy. I have nearly finished removing the mite invasion which started mid to late October. Finished - not so much because I am down to my preferred low level of varroa (a couple are still dropping about 150 mites after dusting) - but because for the moment the weather is too cold and windy for regular dusting. The mite levels are much improved in most of them, so I am happier but will try to rid the last 3-4 colonies of surplus mites as and when it is above 8°C. My colonies fall into two camps; half having dropped fewer than 350 mites in the last 6 weeks after dusting and half which have dropped between 1100-2400 total and without treatment would be small and sickly even if they made it through to spring. I have found no correlation between colony size, position (more isolated) or brood amount so it may be down to those more or less likely to repel drifters, or their propensity to rob dying colonies. Either way I know which ones I shall most likely be rearing queens from next year! I came across an item on varroa bombs this week reminding us that feral swarms often die off due to varroa in their second year. So, all those people who have let their colonies swarm away uncaught, it may come back to bite them when drifters from these dying colonies bring in mites! Another good reason to clip queens.

Some people like to treat their colonies with oxalic acid at the end of December, either trickle or vaporisation. Do monitor beforehand to determine whether this treatment, which is potentially hazardous to us and the bees, is necessary, and follow instructions and safety protocol carefully.

Hoverfly on Calendula

We also need to check the entrance floors regularly (and security, weatherproofing, woodpecker damage etc). Mouse guards can easily become blocked as dead bees

are difficult to drag through the holes and my 5.5mm high entrances too. Observe entrance activity on flying days; I spotted a single drone coming out of an entrance from one of my colonies at home and one at the divisional apiary on 18th November. This is a bit unusual and I shall need to keep an eye on them. One of these I mentioned above, on a single shallow with possibly not enough

Wasps under hive

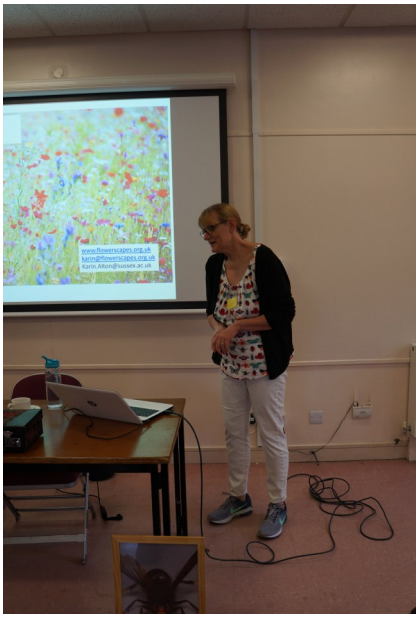
food, masses of brood and two queens so I don't really expect to have a drone laying queen situation. But I wish I could see what was going on in the middle, without disturbing them. When opening them for dusting they are all different, some in tight, sleepy clusters near the top, others open clusters and active and others deep down out of sight, yet all have been flying in the same conditions, mainly for water I think as I keep fishing them out of my water butt even though I have draped hay over the surface to prevent them from drowning.

Research; bees evolved from carnivorous wasps and rapidly diversified about 120mya leading to the 20,000 species we have today. It was thought that the fact of pollen feeding helped them to diversify, but scientists now think that while this did help, it was the shift from being specialists to generalists feeding on many plants which helped them to diversify and to exploit new ecological niches.

Photo Corner

John Hendrie demonstrating pre-wired frames he uses when Queen rearing.

Clive de Bruyn.



Karin Alton opening the convention showing a typical wild flower meadow.

Think that you have a problem with woodpeckers?

Thank you to Tony Robinson for this.

Dr. John Feltwell giving an update on the Asian Hornet.

B&L Divisional Diary 2018 / 2019

Indoor meetings:

Meetings are held on the 3rd Wednesday of the month, October to March at Cliffe church hall, Lewes, unless otherwise stated. Members are invited at 7.00pm to assist with setting out chairs etc ready for a 7.15pm start. Non-members are always welcome.

Winter Programme:

17th October 2018 - Winter work and how to manage your hives over winter and prepare for Spring.

21st November 2018 - Colony Nutrition. Speaker: Pam Hunter.

16th January 2019 - B&L 2019 AGM with the Honey and Mead Show. Honey Judge: Harold Cloutt.

20th February 2019 - Topic and Speaker to be advised.

20th March 2019 - Small Scale Queen Rearing in my Backyard. Speaker: Mike Cullen, Master Beekeeper.

Events for your diary:

25th October to 27th October The 2018 National Honey Show Sandown Park, Esher.

3rd November - SBKA Annual Convention in Uckfield.

2nd March: SBKA Spring Meeting and AGM, Peredur Centre, East Grinstead, RH19 4NF

12th April to 14th April: BBKA Spring Convention, Harper Adams University, TF10 8NB.

27th April: WSBKA Annual Bee Market, venue to be confirmed.

18th May: SBKA Annual Bee Market in Heathfield.

Officers of the Division

President: Lionel Reuben

Chairman: Ian White
E: ianda.pinehill@yahoo.co.uk

Vice-Chairman/Treasurer/Membership Secretary: Pat Clowser
5 Wivelsfield Road, Saltdean, BN2 8FP
T: 01273 700404
E: patricia.blbees@hotmail.com

Hon Secretary: Hilary Osman
Holly Tree Cottage, Norlington Lane, Ringmer, BN8 5SH
T: 01273 813045
E: secretary@brightonlewesbeekeepers.co.uk

Meetings Secretary: Mary King

Swarm Coordinator: Ian White

Webmaster: Gerald Legg
E: gerald@chelifer.com

Newsletter Editor: Norman Dickinson
34 Abergavenny Road, Lewes, BN7 1SN
T: 07792 296422
E: editor.blbees@outlook.com

Librarian: Dominic Zambito

Out-Apiary Managers:
"Grassroots": Amanda Millar
"Knowlands Farm": Heather McNiven

Education Coordinator: Amanda Millar

SBKA County Representatives:
Bob Curtis & Ian White

National Honey Show Representative:
Norman Dickinson

Committee Members:
Sue Taylor, Manek Dubash

The Brighton and Lewes Division of the SBKA cannot accept any responsibility for loss, injury or damage sustained by persons in consequence of their participation in activities arranged.

Contributions to your newsletter

Contributions, including photos, for the newsletter, using a maximum of 900 words, can be sent preferably by email, to the editor. Please refer to panel above for details. Copy to be no later than 12th of the month preceding month of publication.

Photos etc. for the website should be emailed to our Gerald Legg webmaster, see panel above.

Regional Bee Inspector - Sandra Grey,. Mobile: 07775 119430, email: sandra.grey@apha.gsi.gov.uk

Seasonal Bee Inspector - Diane Steele, Mobile: 07775 119452, email: diane.steele@apha.gsi.gov.uk

QR Link to B&L Web Site