THE ESSEX BEEKEEPER

Taking advantage of a free meal

Photograph by Paul F Abbott - Southend-on-Sea Division

Monthly Magazine of the Essex Beekeepers' Association

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Furthering the Craft of Beekeeping in Essex

No. 621 **www.essexbeekeepers.com** **September 2016**

EBKA Divisional Meetings

Diary dates for September & October 2016

1 Sept	Thursday 8.00pm	**Romford**	**'More than Honey'** - film at Chadwick Hall, Main Road, Gidea Park RM2 5EL
1 Sept	Thursday	**Harlow**	'**Winter Preparation'** - Kings Church, Red Willow, Harlow CM19 5PA
4 Sept	Sunday 2.30pm	**Saffron Walden**	'**The Warre Hive'** - John Rhodes apiary, London Jack Road, Widdington CB11 3SN
10 / 11 September	Sat & Sun	**County Event**	**EBKA Honey Show** at Barleylands Country Show, Billericay CM11 2UD
17 Sept	Saturday 2.30pm	**Epping Forest**	'**Bee United' -** end of season transfers. Wanstead Apiary
19 Sept	Monday 7.30pm	**Chelmsford**	**Honey Products including Mead** - The Link, Trinity Methodist Church, Rainsford Road, Chelmsford CM1 2XB
21 Sept	Wednesday 7.30pm	**Dengie 100 & Maldon**	**Members meeting** - The Oakhouse, High Street, Maldon CM9 5PF
25 Sept	Sunday 3.00pm	**Braintree**	**Divisional Honey Show** - White Notley Village hall, Main Road,CM8 1RX
28 Sept	Wednesday 7.30pm	**Southend -on-Sea**	'**Using a Flow Hive—1st year Report.**' Rita Wilson. WI Hall, Bellingham Lane, Rayleigh SS6 7ED
6 Oct	Thursday 8.00pm	**Romford**	**Pre-Conference Forum**, Chadwick Hall, Main Road, Gidea Park RM2 5EL
12 Oct	Wednesday	**Saffron Walden**	'**My new hive'** - Rita Wilson (Flow Hive); Peter Aldridge (Top Bar hive) at The Guildhall, Thaxted CM6 2RE
17 Oct	Monday 7.30pm	**Chelmsford**	**Divisional Honey Show** - The Link, Rainsford Road, Chelmsford CM1 2XB
19 Oct	Wednesday 7.30pm	**Dengie 100 & Maldon**	**Members meeting** - The Oakhouse, High Street, Maldon CM9 5PF
20 Oct	Thursday	**Epping Forest**	Tbc
21 Oct	Friday	**Braintree**	Tbc
26 Oct	Wednesday 7.30pm	**Southend -on-Sea**	**Divisional Honey Show** - WI Hall, Bellingham Lane, Rayleigh SS6 7ED

Vacancy for the EBKA General Treasurer

At next year's AGM, Bob Manning, the current Treasurer will come to the end of his term of office and there is a vacancy to fill that role.

The position would require a member with an understanding of accounting procedures and have experience in dealing with accounts to the level of producing an annual set of accounts. Experience as a treasurer to a Registered Charity could be useful. A working knowledge of computerised accounting systems would also be a requirement.

If you wish to be considered for this role or require further information, please contact:

Bob Manning, on 01708 760770

or email edwin.manning@virginmedia.com

County Honey Show - 10/11th September

at Barleylands Country Show

Don't forget to bring along your candles and hive products for sale at the two day show

Notes from the Central Executive Committee (CEC)

Meeting on 14 July 2016

Items taken at the above meeting included:

Meeting the BBKA Link Trustee – Howard Pool

In the notes from the CEC meeting held in May it was reported that Howard should be invited to a future meeting. Howard joined us for this meeting.

A full version of all the issues discussed is set out in the document on the Members' Section of the EBKA website. However there was one specific issue that the CEC wished to bring to members' attention:-

> ***The BBKA Insurance Proposal***
> *The CEC welcomed the proposal to introduce "all-risks" insurance cover through a Lloyds Underwriter to include bees, hives and equipment (with the exception of colony loss through bee disease).*
>
> *The BBKA has been offered this service for a fixed cost based on the level of "take up" by Associations/members. The CEC has responded to the BBKA requesting that our members would require a firm understanding of the full terms of the insurance cover being offered (including all such exclusions) before making a judgment on the merits of the policy.*

Other items reviewed at the meeting included:-

2016 Divisional Bulk Buy - "Pop up Shelters"

These marquees complete with the EBKA logo have been distributed to the Divisions where some have already been used at Divisional events.

Divisional Voting Members (CEC Trustees)

DVMs provide reports on the activities of their Division which are reviewed at CEC meetings. It has been agreed that these reports would be of interest to members and so they can now be viewed on the EBKA Website.

Feedback on any matter discussed by CEC is welcomed and should be directed to your Divisional Trustee (contact details on inside back page).

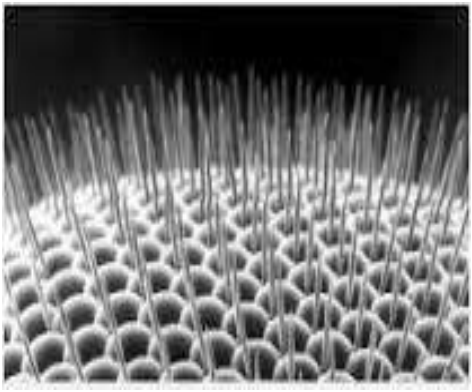
How do bees see and what do they see?

The honey bee has two compound eyes and three simple eyes. They need all of them to achieve their tasks, and they see images very differently to humans.

Compound Eyes

Like most other insects, the honey bee has compound eyes. Their compound eye is not called that because it is complex (although it is), it is 'compound' because it is comprised of many single eye units synthesized to make one composite eye. (The word 'compound' comes from the Latin word 'componere', which means 'to put together')

The hundreds of single eyes (called ommatidia) are arranged next to each other, each with its own lens and each looking in a different direction. This does not mean that the bee sees lots of little pictures, because each ommatidium sees only one intensity, contributing a 'pixel' to the overall image perceived by the compound eye, just like a single photoreceptor in the retina of our own eye.



In the picture opposite, each round hump is a separate eye unit (photoreceptor cell). Each unit sends its view of the image to the brain of the bee. The brain combines all the images of thousands of eye units, and forms a detailed picture of its subject.

Notice the hair strands between each of the plates of the eye. These hairs aid in determining wind direction and flight speed of the bee.

But there are differences between the bee's view of the world and ours. The bee has a lot fewer ommatidia than we have photoreceptors, and they are not evenly spaced.

Another aspect of the honey bee's eye compared to the compound eyes of other insects is the ability of the bee to see colour.

Simple eyes

The honey bee also has three simple eyes called 'ocelli' (Latin - 'little eye'). Calling them 'simple' does not imply that they are not complex, they are far from that. The ocelli of the honey bee is similar in design to the human eye due to its single lens.

They are used for navigation and for maintaining stability in flight. It is interesting to note that they are laid out on top of the head in a triangle pattern. Whether this feature helps them to navigate by triangulating their position against the sun is not known.

The ocelli are light-gathering phenomenon that can see ultraviolet light. (Seeing UV light has great benefits because it penetrates cloud cover.)

Honey Bees' Vision Range

The vision range of the honey bee is very different to that of our own, they see colours differently, and rely more on image motion than on shapes, but have additional vision capabilities. As already mentioned they are able to see UV light, but unlike us do not see the colour red. This alters the images that they see compared to how they would appear to us, as indicated by the photo simulation below.

Human's Image

Bee's Image

It is believed that honey bees can see images in extreme detail when closer than 3-4 feet.

Research has shown that bees estimate the speed of motion, or optic flow, of the visual world around them and use this to control their flight. Honey bees are excellent navigators and explorers and use vision extensively in these tasks, despite having a brain of only one million neurons (human brain's have 100 billion).

Bees use optic flow to navigate and fly down a corridor. How a bee moves determines what features in the world it sees. This explains why bees are confused by windows - since they are transparent, they generate little optic flow as bees approach them.

(Understanding their use of optic flow and how bees avoid walls, and what information they can use to navigate, is being used by researchers and designers to greatly enhance the performance of autonomous flying robots.)

Their compound eyes are especially adept at 'locking on' to anything that is moving quickly. Like a heat-seeking missile, when a honey bee sees a fast-moving object, its attention is 'caught' and an alarm goes off triggering the honey bees' colony protective instincts. We often hear experienced bee-keepers hark on about the importance of slow and careful movements in the apiary. Their two large eyes see your every move, so remember…..

Slow and Careful when handling your bees!

courtesy of various sources/ebees

Bees poisoned!

In the July edition of their newsletter, the Chairman of the West Sussex BKA, Jim Norfolk, wrote:

I have had several communications about poisoning bees recently, so I thought I would dig a bit deeper. Schedule 5 of the *Wildlife and Countryside Act 1981*, has a long list of species ranging from Adder to Whitefish which are protected. It includes a number of butterflies, moths, and beetles, but no bees.

The law states: *'If any person intentionally kills, injures or takes any wild animal included in Schedule 5, he shall be guilty of an offence.'* So honey-bees are not protected nor are any of our bees. So can bees be killed, for example, by someone with bees in their roof or even bumblebees under a shed, for no other reason than just being there?

The current guidelines are given in a booklet available on BeeBase entitled: *'Guidance on Treating Feral Colonies'*. The Pest Management Alliance (PMA) has a more detailed one. It is mostly just common sense guidance. Don't poison bees except as a last resort, follow both the BBKA guidelines, and the HSE guidelines on pesticide use. Is the nest causing a problem and have people been stung? Every reasonable action should be taken to prevent foraging honeybees finding the nest by blocking the holes or removing the nest.

The PMA guidelines state: *'The requirement to "take every reasonable action to prevent foraging honeybees from gaining access to the treated nest, by removing the combs or blocking the nest entrances" still applies, even though this phrase may not be on the label of the product concerned. This requirement is implicit in the Food and Environment Protection Act 1985 with reference to non-target species and is of particular importance in this situation given the likelihood of neighbouring bee colonies robbing the treated nest.'*

Blocking holes is actually difficult. I thought I would trap out the bees in my roof. I left one entrance and then set about sealing all the others. The bees just kept finding more holes further and further away. Eventually I gave up. They are still there. Basically the only way to remove bees is to open up the space and take out the combs. Poisoning and sealing up is not easy to do and apart from the risk to robbing bees and contamination of honey with pesticide and what about all those tens of pounds of honey fermenting inside the wall?

If you could identify which of your neighbours had called in the pest controller for bees in their roof you might well be able to bring a case, not because your bees had been poisoned, but because the guidelines had not been followed

It is now 30 years since West Sussex beekeeper Dick Tutton made legal history when he was successful in bringing an action along with 3 other local beekeepers against A D Walker Ltd over poisoning bees when the farmer sprayed his oilseed rape with *Hostathion*. The action was brought on the grounds of negligence in that the farmer had used the chemical in a manner which contravened advice issued by the Agricultural and Advisory Service (ADAS) and the manufacturer's instructions issued with the product. The advice and instructions recommended that in order to reduce the risk of harming bees, the chemical should be used on cool days or at dusk and never when the crop was in bloom.

Where do we stand today? One of our members lost colonies to spray drift last year. The hives were situated just 25 yards from a crop of wheat, which was sprayed by a contractor. The Bee Inspector visited and samples were taken but nothing came of it. The point is not whether the bees are poisoned but whether the rules were followed. The Wildlife Incident Investigation Unit (WIIU) categorise poisonings as:

approved use;
misuse, in which rules were not followed; abuse, in which animals were deliberately poisoned;
unspecified and
unknown.

If the use was approved and the pesticide was used correctly then nothing can be done. So nationally what is the incidence of reported bee poisoning?

The WIIU publish their results and for 2014 of 336 cases, mostly birds and mammals, 5 were bumblebees and 19 honeybees. Reading through those 19, presence of pesticides were found in only 6 and all cases were classified as 'unknown', which would indicate there was no subsequent prosecution.

So what are we to make of the new *BeeConnected* Crop Spray Alert launched by the BBKA, the NFU and the Crop Protection Association? - *'Alerts from farmers will tell beekeepers when spraying is happening up to a maximum of 5km from their hives, the crop being sprayed and the compound being applied. The beekeeper will receive an email allowing them to take mitigating action such as moving their hives or shutting the bees in for a short while'.*

Farmers and beekeepers may register now at **www.beeconnected.org.uk**, and the system will go live in September, at the start of the next spraying season.

PROPOLIS

Propolis - the soft, pliable and very sticky orange substance that gums all the hive parts together and stains your clothes during summer hive inspections. It is also the hard and brittle orange sealant that has to be cracked open in order to enter the hive during winter or early spring. No wonder it goes by the name “bee glue”!

Derived from the Greek, *propolis* means something like “before the city” and it is used by honey bees to cover almost every surface within the colony. In the established tree nest of a feral colony, the rough bark immediately surrounding the entrance is bitten away and a smooth layer of propolis is laid down. If the entrance itself is too large then the bees reduce its size using propolis. Within the nest cavity, after removal of all weak and rotten wood, any holes or crevices within the walls are filled and smoothed out with propolis. Indeed, one of the first steps in transforming the cavity into a home is the coating of the entire inner surface of the nest area with a 0.3-0.5mm propolis film known as a propolis envelope. Thicker ridges of propolis are then laid down at the attachment points of comb to the walls.

On comb itself, a thin propolis film is found upon the outer rim of every cell. Workers even embed propolis inside cleaned and polished cells. Any cells containing contaminated pollen become entombed in propolis as, upon their death, do any colony invaders that are too large for the bees to physically remove. It is obvious that propolis is highly valued by the bees.

What is its purpose?

Propolis is a crucial architectural fabric within a honey bee colony. It serves as a caulk for blocking draughts and limiting the influx of water from tree sap or the immediate external environment. It can also be used as a simple physical defence against a range of pests.
For example:

At the entrance, a sticky layer of propolis can deter small nest invaders such as grubs and ants.

Within the nest proper, it is used to eliminate any cracks and crevices that would otherwise provide ideal egg-laying sites for wax moth.

Also within the nest, it can be used to trap small hive beetles in “propolis prisons”, thereby breaking their reproduction cycle.

However, all these important physical defence functions are almost trivial compared to what is arguably its primary role, namely the provision of colony -level defence against microbial infection. Any warm and humid cavity containing large stores of carbohydrate and protein, open brood and highly

social trophallactic insects should be an obvious target for microbial infection.

However, containing over 300 plant-derived chemicals with antibacterial, antiviral and antifungal properties, the propolis envelope provides "social immunity" for the colony. Being present on every conceivable nest surface, it literally serves as a bioactive doormat that is constantly decontaminating the inhabitants of many potential pathogens.

Whilst much of the antimicrobial effect is probably dependent upon direct physical contact with propolis, some might be due to volatile components that diffuse through the air. Examples of how propolis alters the microbial landscape and/or the metabolism of certain pests are summarised below:

Mitigation of the virus threat posed by Varroa destructor mites.

There is 100% Varroa mortality when the mites are exposed to a high concentration of the volatiles from alcohol-soluble propolis, whilst weaker concentrations significantly impair mite metabolism. The varroa mite serves as a devastating viral transmission route against which honey bees currently have no effective natural defence.

Protection against *Paenibacillus* larvae (American Foul Brood)

Propolis protects larvae against AFB spores, but it cannot eradicate established disease. It has also been shown to reduce the AFB spore load in honey.

Disruption of the reproductive activities of *Galleria mellonella* (Greater Wax moth) - Propolis can impair the metabolism and increase the mortality of the greater wax moth.

Protection against scavengers of dead flesh

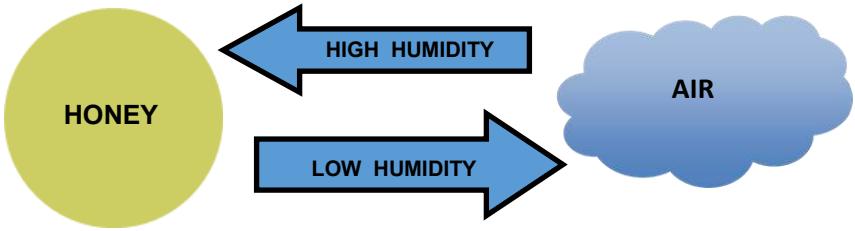
Propolis is used to encapsulate the dead bodies of any hive invaders too large for honey bees to expel from the nest. This minimises carcass attractiveness to diverse scavenging arthropods at various stages in their life cycle. It also minimises nest contamination by a wide range of bacterial and fungal decomposers.

Thanks to John Chambers, Warwickshire BKA via eBees

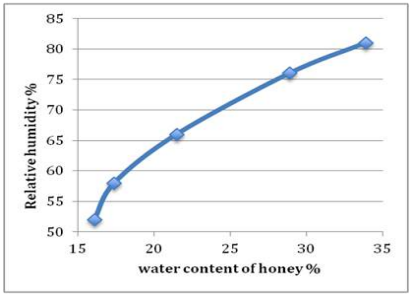
Water and Honey

Jim Norfolk - West Sussex Beekeepers, courtesy of *eBees*

Now, we all know that honey should contain 20% or less water and is made from nectar, which has a lot more, being up to 70% water. The bees evaporate the excess water. Now honey is funny stuff. It is hygroscopic, which mean it absorbs water from the air but if the relative humidity is low enough, water leaves the honey and goes into the air



Relative humidity is a convenient way to indicate how much water the air is carrying. We are comfortable between 30 and 70%. Above 70% we say the air feels humid. The chart below shows the equilibrium between relative humidity (RH) and water content of honey. Thus honey with 20% water content will take up water if the RH is above 63% but below that value, water will leave. The lower the water content of the honey, the ower the equilibrium RH becomes. Relative humidity in the UK is around 70% but can vary between 60 and 100%. That means most days honey with 20% water content would absorb moisture from the air.



It is relatively easy to evaporate water from nectar initially but as the concentration of sugars increases, a lower RH is required to get down to the sort of water levels needed before honey is capped. So how do bees remove the last of the water in our moist climate? They lower the humidity.

Arnia (who produce hive recording systems) state that summer humidity readings in the brood box remain fairly stable at around 55%. To achieve this, the bees warm the incoming air. Cold air holds less moisture than warm air so if it is warmed then the relative humidity goes down.

The warm air from the brood box will rise up through the supers and pick up moisture from the nectar and then exit through the top or perhaps some moisture will condense on the cooler hive walls and run down.

This would depend on outside ambient temperatures. A relative humidity of 55% would, according to the graph, result in a minimum water content of around 17%, which is about what we get for extracted honey in UK.

So the bees have made this near perfect honey and we extract it and put it in containers and forget about it until we go into our store months later. Oh dear, the honey has set which is not a problem but the surface often shows signs of fermentation. Sometimes this can be scraped off and the honey saved, but at other times the whole bucket is ruined. Two things cause this. When crystals form, they hold less water than the original liquid honey, so the water concentration in the liquid between the crystals goes up. It is here that the yeasts start to grow. There is another factor at work, which can make fermentation worse. There is an air space above the honey and as that air is cooled, it contracts, drawing air in if the lid is not totally sealed. This air will have a higher relative humidity and the water readily transfers to the surface of the honey. If the room then warms up, the air in the bucket expands expelling some through the lid. This continued pumping in and out of air results in more and more water entering the honey surface. This is one reason why it is best to store honey at an even temperature.

I hit upon the solution, which was to run a small domestic dehumidifier in my honey shed. The result is no more buckets of fermented honey. The dehumidifier can do more. It will lower the water content of uncapped honey, if it is a bit marginal for extraction. The way to do this is to stand the super on its edge so that air can pass through between the frames. Once extracted and in buckets it is harder to lower the water content with a dehumidifier but if it is kept warm at 30°C and a mesh placed over the bucket to keep pests out it can be done, but it takes time.

You can speed it up by using several containers to increase the surface area. It is however better to buy a refractometer and test any honey that is not fully capped before you start to extract it. A small quantity of honey, which is nearly ready to be capped, will have a slightly higher water content but will not affect the overall water content much. Just watch out for any frames of nectar. Some people use the shake test when assessing frames to extract. If it's nectar it comes out, but if it is honey it stays in the cells.

Here's hoping you have lots of good honey to extract this season.

Current threats to honey bees in the UK

At a Spring Convention held in York. Giles Budge of the National Bee Unit said he thought the top ten threats to honey bees (in reverse order) are:

10) Nosema
9) Pesticides (including systemics)
8) Honeybee genetics
7) Chronic Bee Paralysis Virus (CBPV)
6) European Foulbrood (EFB)
5) American Foulbrood (AFB)
4) Wasps
3) Varroa and deformed wing virus (DWV)
2) The weather
1) **The beekeepers themselves**

U.S. Customs and Border Protection

US Customs seize 60 tons of Chinese honey

In 2001, after determining that Chinese-origin honey was being sold in the United States at less than fair-market value, the US Commerce Department imposed anti-dumping duties. Currently, these are $2.63 per net kilogram, in addition to a "honey assessment fee" of 1.5¢ per pound on all honey.

On 28th April 2016, three shipping container loads (195 barrels valued at $200,000) of bulk honey were seized as being falsely declared as originating from Vietnam to evade anti-dumping duties. Tests determined that the honey had a greater than 99% probability match with Chinese-origin honey.

The US authorities have convicted nine individuals (not including 10 remaining foreign fugitives) in a series of global schemes which evaded nearly $260 million in anti-dumping duties on honey from China and which also involved honey containing antibiotics prohibited in food.

STOP PRESS -

The Asian Hornet, *Vespa velutina,* has been identified in Alderney - the most northerly of the Channel Islands.

From: *Pest Control News July 2016*

Who's who and how to contact them

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★ THORNE SALE DAYS ★

WINDSOR
STOCKBRIDGE
RAND

Saturday 3rd September
★ 10.00am to 1.00pm ★
Saturday 24th September
★ 10.00am to 1.00pm ★
Saturday 15th October
★ from 10.00am ★








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