

# THE IPSWICH & EAST SUFFOLK BEEKEEPERS' ASSOCIATION

First Founded 1880; Registered Charity 1158794



## Newsletter for May - July 2016

Queen  
colour  
is white

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*Opinions expressed in this Newsletter are not necessarily either those of the Editor nor of the Association.*

The Suffolk Beekeepers' Association is an Area Association of The British Beekeepers' Association. <http://www.bbka.org.uk/>

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## Practical beekeeping training - weekly

At 2:00 pm on Sunday 1<sup>st</sup> May our Association apiary at Humber Doucy Lane opens for practical beekeeper training. This is a long wished-for development. There will be something different every week and something the same - the bees. To lead the training, we have there, in rotation, Barrie Powell, Paul White, Richard Allen and Jeremy Quinlan. They will be supported by one or two of Malcolm Marchant, Rinus Scheijde, Nick Bird, Maureen Howard, Dave Thomas and Gillian & Shobo Leung. This is a considerable commitment by many. It is an opportunity for all to advance their beekeeping knowledge and improve their skills. **Please support us and use the facility.** While those who want to attend don't have to book, you can just turn up, your booking would give us a good idea of how many are coming, allow us better to plan and so would be much appreciated. Book via the website: [http://suffolkbeekeepers.co.uk/Ipswich\\_East\\_Suffolk\\_BKA.html](http://suffolkbeekeepers.co.uk/Ipswich_East_Suffolk_BKA.html).

Our landlord, Len Woolf, has lost his battle to retain his small-holding near Rushmere, so is re-developing his land where we have our apiary. We think we can work together but it would be better if we had our own place. Does anyone know of a small corner elsewhere that we might buy?

Also, we have just been offered a sturdy hut 4 m x 4 m. If we had our own apiary, it could be an excellent store that would double as a classroom in case of rain and house a small stove and kettle.

Please keep your ears and eyes open for a suitable place. I wish you all an excellent season.

Jeremy

## The Asian Hornet

The Asian Hornet is on its way. One worry is that, in trying to trap them, other beneficial insects – especially wasps and European hornets will also be caught and killed. Both these, despite their bad press, are important useful predators. Without them we would be overwhelmed by aphids, leatherjackets, mosquitoes, etc. So we should be very careful using wasp traps, which are 'catch-alls', or destroying wasp nests.

Asian hornets are easy to recognize. Only very slightly smaller than the European - they are largely black - NOT yellow - apart from their legs and one abdominal band towards their tail. It nests very high and can mass attack so is dangerous - don't attempt to deal with it. Be scrupulously careful when coming back from Europe - a mated queen could easily be brought into the country hidden away in/under cars, caravans and camping equipment.

If you think you can see one, send an email with a photograph and location details to: [alrtnonnative@ceh.ac.uk](mailto:alrtnonnative@ceh.ac.uk).

## Coping with Varroa

Honey bees are able to live in many places on this earth in varied locations, climates and structures. They survive because of their genetic variability. They can live in a top bar hive just as well as a chimney; they don't care. As the beekeeper / manager you need to be sure that varroa and the consequences of varroa can be addressed. The key to success is to *sample - and sample again*. Then, if appropriate, treat, using the least toxic material first. Then *sample - and sample again* to find out if it worked.

## Our Seasonal Bee Inspector is Sandra Gray

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## The Suffolk Show

### Wednesday/Thursday 1<sup>st</sup>/2<sup>nd</sup> June

As usual there is a 'Bee Tent' with the Show Hive, equipment for sale from various suppliers and also the Honey Show with numerous classes for entry. To find out more about the classes please go to the Suffolk Beekeepers' website:

[http://www.suffolkbeekeepers.co.uk/Suffolk\\_Show\\_2016.html](http://www.suffolkbeekeepers.co.uk/Suffolk_Show_2016.html)

decide what you want to enter, complete the entry form and submit via the website, email or post. We look forward to receiving your entry forms - please don't leave it too late!!

## Bee Tea & Skep Making Sunday 19<sup>th</sup> June

Jackie & John Naylor have kindly agreed that this may again be at Walk Farm. John Fairhurst & Annette Whittaker will also be running a skep-making course. The tea is free but, for skep materials, there will be a charge of £5.00.



New use for unfinished skep: Liz Marley

This is also an opportunity for those wondering if they might keep bees to see them close up. They and their families are especially welcome – see the bees, meet the beekeepers, taste the tea, eat the cake! **Please tell those who may be interested.** Bee tours at 2.15 and 3.00 - choose the time and reserve the place. Places are limited – those unsuccessful will be offered another date. *Protective clothing will be provided but those wishing to see the bees are asked, please, to bring their own wellies.*

**All Ipswich & East Suffolk BKA members, their wives, husbands, partners and children are invited to come to this social event. Beekeepers are really nice people - do come, exchange views and chat.**

If you mean to come, please email [JeremyQ@tiscali.co.uk](mailto:JeremyQ@tiscali.co.uk) or phone beforehand (01473-737700) - we will then know how many cakes to bake.

*There are livestock on the farm so please **don't** bring your dog.*

## Apiary Safari - Saturday 9<sup>th</sup> July

This is a tour of members' apiaries; probably in the area between East Bergholt to Holbrook. Two Bee Inspectors will accompany the tourists to impart their knowledge, advice and expertise; it is a great opportunity to learn. It is also a great opportunity to pick up tips from those members who kindly allow us to visit their apiaries, and see how other beekeepers work.

We meet at 10:00 for 10:30. The safari is always a good day, and numbers are limited so please let us know if you would like to attend. To book a place, email [JeremyQ@tiscali.co.uk](mailto:JeremyQ@tiscali.co.uk) or phone 01473-737700.

## Should this newsletter include more articles for beginners? What would you like to see?

Well, I should be grateful for your comment on the matter. It is always good to get a comment of any kind! As there are several excellent books for beginners, this editor aims usually not to repeat what already appears there. But that is his choice. What would you like to see addressed in these pages? Please tell me.

## Portable Appliance Testing

While the [HSE](#) says that portable equipment does not have to be tested every year, we do have equipment that needs testing occasionally. If we have a member (you need not be a qualified electrician) with the right equipment for the task, I should be grateful if you would be kind enough to let me or Malcolm know.

## John Forbes: A sincere "Thank you"

John Forbes, a member for forty years, recently contracted a severe illness. Among other effects, he became unable to lift. As a result, he has given to the Association all his equipment, enough for 15 colonies, and three hives of bees.

Some of this will be used to improve our apiary equipment, the rest, Commercial bottom bee space brood boxes and National supers, will be made available for beginners.

We wish John the very best of health possible at this difficult time - and our good wishes to his family too.

## Photographic challenge: £5.00 prizes

Now that nearly everyone has a camera, it would be good to get more photographs of bees, plants and related subjects. If you, our readers, would take a few and send them in, we would be delighted to print them. To encourage you, we offer £5 for every one printed. It isn't a large sum; the true glory will be for everyone else to see it credited to you. And you could also enter it in the photographic competition in the Suffolk Show.

## Stewart Spinks, Bee Inspector - Resignation

"Through this role and as the founder / chairman / secretary of the Norwich Beekeeping Club (formerly UEA Beekeeping Society), I have met and become friends with a good many beekeepers in the Norfolk/Suffolk area. I thank everyone for their help, support and friendship over the past few years, in particular the past and present members of the committee of the Suffolk BKA. I look forward to continuing these friendships as I continue along my beekeeping journey." *Stewart Spinks*

## 'Are Neonicotinoids killing bees?'

### A debate in London, 22 Sep 16

This event is for both academic and industrial scientists. Offers of posters and PhD student presentations are sought and prizes are offered. See: [www.soci.org/events](http://www.soci.org/events).



## Box House Beekeeping Supplies

*In East Bergholt, Suffolk - for the local supply of hives, frames and foundation, tools and other equipment for keeping bees. Open by arrangement - please email or telephone Paul White to discuss your requirements. 01206 299658 or 07768 634038. [www.box-bees.co.uk](http://www.box-bees.co.uk); email: [sales@box-bees.co.uk](mailto:sales@box-bees.co.uk)*

## Association honey extractors

The Association has two extractors that members may borrow – for no longer than 3 days - one electrical and the other mechanical. 01473 420187. *Jackie McQueen*

"A swarm of bees in May. . . ." Some colonies have already swarmed - and we are only just into May. Be warned! Be ready!

According to Egyptian mythology, when the ancient Egyptian sun god Re cried, his tears upon touching the ground turned into honey bees. For this reason, the honey bee was sacrosanct in ancient Egyptian culture.

## Can Deformed Wing Virus be cured by vaccination?

At this year's BBKA Spring Conference we had a progress report from Professor Steve Martin of Salford University on 'ReViVe' (Rolling out the evolution of resistance to Varroa and DWV). This aim of this work is to discover why this virus is not always fatal to the Western honey bee. Another principal researcher is Dr Declan Schroeder of The Marine Biological Association of the United Kingdom; it isn't strange to involve someone of his background - viruses are a universal scourge of every form of life. Their research is being funded partly by Bee Diseases Insurance Ltd (£45,000 over three years) and partly by around 60 individual associations (which includes the Ipswich & East Suffolk BKA). Together, these have pledged another £40,000 over 3 years plus practical help with colony samples.

Although the research has only just begun, much useful information has already been learned. Beekeepers inspecting a colony may point out those bees with shrivelled wings as suffering from Deformed Wing Virus (DWV) but, in fact, every bee in the colony will carry the virus. DWV could be the most widely distributed virus on the planet. In each bee there may be as many particles as there are human beings on Earth but some have shrivelled wings and others, the great majority, do not. Many insects suffer from wing defects, perhaps from a lack of water in development. Why some bees exhibit shrivelled wings and others do not has yet to be established; it may be due to the site of the bite. He went on to say that most bees have one wing very slightly longer than the other.

A few beekeepers have used no Varroa controls at all, hoping that natural selection would bring a few colonies through. In Swedish Gotland, Prof Ingemar Fries tried this; he called it the "007 method - Live & Let Die". A few colonies did survive by swarming frequently. The overall result was tiny colonies unable to store a surplus. Ron Hoskins had also tried this in Swindon but with much better results. His bees did better than just survive; he hoped he had achieved hygienic bees resistant to Varroa and/or DWV. It has not yet been determined whether his bees are indeed hygienic but it has been established that, while his bees had just as many particles of DWV, theirs turned out to be a different strain, DWV 'B', which happens to be benign. This was a fortunate chance event. Reintroductions of the virulent strain, DWV 'A', from drifting bees and drones were not able to become infective through a mechanism known as 'Super Infection Exclusion'.

Originally, it was only possible to detect viruses if there was a 'shed-load' of them present. The polymerase chain reaction (PCR) technique has enabled us to detect small numbers. We now know that what we thought was a single virus, is a galaxy of many slightly different ones. The same virus is found in many different creatures. Steve Martin's Hawaiian research had showed how, pre Varroa, the virus was present in many different forms, none of them virulent, but as soon as Varroa appeared, the many strains reduced to one virulent one.

We now know that DWV exists as an endlessly mutating swarm of variants, a quasi-species which shares a recent common ancestor; among them are a number of master variants. The dominance of one master variant over another will lead to different life histories for the colony, that is, death if DWV 'A' dominates (Martin et al., 2012) or health if DWV 'B' dominates (Mordecai et al., 2015). By existing as a diverse swarm of variants, viruses are able to co-occupy several biological niches. A 'C' strain has been found in Devonshire; there are likely to be others; the molecular clock estimation predicts that Type C diverged from the other

variants ~319 years ago. See:

<http://www.nature.com/ismej/journal/v10/n5/full/ismej2015178a.html>

The 'A' strain is now endemic in the northern hemisphere and New Zealand, the 'B' strain in the southern hemisphere - but not yet in Australia where no Varroa has yet been found - due largely to their effective bio-security. In a similar way that cow-pox inoculates humans against small-pox, we hope we may be able to vaccinate our bees against the virulent 'A' strain and render Varroa relatively harmless.

Just in case we all get too excited, Steve warned us that THE NEXT BIG THING beekeepers may have to contend with could be spirochete bacteria transmitted by a Leptus mite that has a parasitic larval stage. Oh, joy! [Notes by Jeremy Quinlan]

## Pesticide affects learning in honey bees - but not in Bumble Bees

The research, published 7<sup>th</sup> April 2016, is the first time scientists have looked into how both species respond to field-realistic-levels of the neonicotinoid insecticide 'clothianidin' which was banned for use on flowering crops by the European Union in 2013.

Scientists exposed honey bee and bumble bee workers to the pesticide for 11-12 days and then assessed the effect of the pesticide using a proboscis extension reflex conditioning assay, which tests how bees learn to associate an odour with a sugar reward. The scientists found that clothianidin impaired the honey bees' ability to learn the association, but surprisingly had no adverse effects on the bumble bees.

Dave Goulson, Professor of Biology at the University of Sussex said: "Our research has important implications for global regulatory assessments which generally use honey bees as a model for all bees.

"We show for the first time how this banned pesticide, while having a significant negative effect on learning in honey bees, had no adverse effects on learning in bumble bees. This is unexpected, since previous work suggested that this pesticide has a more pronounced impact on colonies of bumble bees than on those of honey bees.

The research also looked at how the microsporidian parasite *Nosema ceranae*, a potential major threat to honey bee populations in Europe, affects the memory and learning of both species. The study found that infection by the parasite slightly impaired learning in honey bees, but did not infect bumble bees.

ABJ Extra - April 7, 2016

## Honey bee gut bacterium improves *Nosema* resistance

The honey bee is host to a variety of micro-organisms. The bacterial community that occupies the adult worker gut contains a core group of approximately seven taxa, while the hive environment contains its own distribution of bacteria that is in many ways distinct from the gut. *Parasaccharibacter apium* is a hive bacterium found in food stores and in larvae, worker jelly, worker hypopharyngeal glands, and queens. Its presence increases larval survival under laboratory conditions. To determine if this benefit is extended to colonies in the field, we tested to see if *P. apium*: 1) survives and reproduces in supplemental pollen patty, 2) is distributed throughout the hive when added to pollen patty, 3) benefits colony health, and 4) increases the ability of bees to resist *Nosema*.



*Parasaccharibacter apium* survived in supplemental diet and was readily consumed by bees. It was distributed throughout the hive under field conditions, moving from the pollen patty to hive larvae. While *P. apium* did not significantly increase colony brood production, food stores, or foraging rates, it did increase resistance to *Nosema* infection. Our data suggest that *P. apium* may positively impact honey bee health.

Vanessa Corby-Harris et al. DOI: <http://dx.doi.org/10.1093/jee/tow012.537-543>.  
First published online: 13 Feb 2016.

## Nosema ceranae - at least 3 different strains found world-wide

The strain found in New Zealand is thought to be most similar to that observed in Iran, Lithuania, Poland, Mexico, Italy, Argentina and adjoining countries. Another strain is found in the USA, Australia, France and Taiwan. A third has been found only in Morocco. Since geographic sampling is incomplete, this can be only an interim finding. *Journal of Apicultural Research* for January 2016

## Spring bee health clinic report

Bob Maurer's first Adult Bee Disease Clinic of 2016 examined a total of 69 samples from 17 apiaries submitted by 16 beekeepers. Of those, 17 apiaries, 9 had some level of *Nosema* infection. 18 of the 69 individual colony samples (26%) had some level of *Nosema*, of which 5 were light cases, 8 were medium and 5 were high. Since 1991 over 2,500 samples have been tested at 46 of our clinics; the average number of positive *Nosema* samples per clinic being 23.68%. Last August was the worst, when 75.8% of the samples were positive for *Nosema*! However ... this spring 18 of the 69 samples were from our association apiary, so only 51 samples were received from 16 members. Where were the samples from our other 200+ members?

Reigate Bee News May 2016

## Pollen-derived battery electrodes?

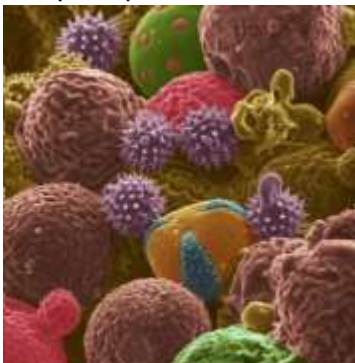
The anodes in most of today's lithium-ion batteries are made of graphite. During recharging, lithium ions are stored in the anode.

Researchers tested pollens from bee collected loads and cattail (reed) pollen-derived carbons as anodes. Whereas bee collected pollens are a mixture of different shapes, cattail pollens are all the same shape. Pollens were processed at high temperatures in a chamber with argon (pyrolysis). This yields pure carbon in the original shape of the pollens.

These were further processed, activated, by heating in the presence of oxygen to form pores in the carbon structures; this increases their energy storage capacity.

It was found that charging for 10 hours resulted in a full charge, charging for only one hour resulted in more than half of a full charge. The theoretical capacity of graphite is 372 milliamp hours per gram and we achieved 200 milliamp hours after one hour of charging. The work continues.

*Scientific Reports*, 5 Feb 2016. Vilas Po is, an associate professor in the School of Chemical Engineering and the School of Materials Engineering at Purdue University, Lafayette, Indiana, USA.



Colour was added to the original black-and-white image. *Purdue University image/ljialiang Tang*

## Apis cerana signals hornet attack

Six years ago, James Nieh, a professor of biology at UC San Diego, discovered that *Apis mellifera* foragers, when attacked at a food source, returned home and delivered stop signals to nestmates recruiting for that dangerous food source. These signals inhibited recruitment, the famous waggle dance, but researchers did not know what triggered them.

Nieh wanted to find out if other honey bee species also used stop signals so, with collaborators at the Chinese Academy of Science and Eastern Bee Research Institute at Yunnan Agricultural University, they worked with the Asian honey bee, *Apis cerana*. This species occurs from India to Japan and is an excellent model for studying the effects of predator threats because it is attacked by several species of hornets; these include the world's largest hornet, the "yak-killer" *Vespa mandarinia* and a smaller, but still formidable hornet, *Vespa velutina*, the 'Asian Hornet', now a plague in France. Both these hornets attack foraging bees and their nests; the scientists wondered if *A. cerana* would produce stop signals for both of them.

"We guessed that larger predators would pose a bigger threat and the bees would perhaps produce more signals when they attacked. "We were, however, very surprised to find that these bees not only produced more stop signals, they also produced different kinds of stop signals. "Attacked foragers' stop signals increased in pitch according to predator size. The larger, more dangerous predators triggered higher pitch stop signals; these were more effective at stopping waggle dancing than the lower pitch stop signals triggered by the smaller, less dangerous predator. In addition, if guard bees and returning foragers were attacked at the nest entrance, they produced longer duration stop signals to warn nestmates of the imminent danger outside.

This work was published in *PLOS Biology* in March 2016

## Responsible pesticide use

BeeConnected is a new website for farmers. This is supported by The Voluntary Initiative. It is being piloted in Hertfordshire. See: [Reference](#).



## Honey Shortbread Biscuits

From *The Honey Recipe Book - Favourite recipes from Suffolk Shows*. This book will be on sale @ £3.50 in the Suffolk Show.

½ lb SR flour                      ¼ lb butter  
½ lb honey                              Milk to mix

Work the ingredients well together. Mix in enough milk to make a stiff dough. Roll out well and cut into shapes. Bake in a hot oven until golden brown. *Jackie McQueen*

## The Basic

If you have been keeping bees for two years and have not yet taken The Basic, perhaps it is time you did. Since the pass rate is 98%, there's nothing to worry about! The deadline for assessments is 31<sup>st</sup> August - so applications by 31<sup>st</sup> July. Come to the Ipswich Humber Doucy Lane apiary (see page 1) for a dummy run.

## We welcome our new members

Sally Carr, Jim Clarke, Barry Crabtree, Tim Daley, Jam Hamstead, Sally Hepher, John Lee, Hazel Lee, Ben Lincoln, Ruth Lincoln Anthony Mason, Celia Mason, Kim Meredew, David Moore, Sammy Page, Bridgett Quinlan, James Reed, Samantha Reed, Ross Russell, Simon Sturgis, Janice Taylor, Steven Taylor and Ray Templeton.

## Prettiest bee in the world?



The blue-banded bee (*Amegilla cingulate*) sports a lush golden and white fluff, enormous green eyes, and tan-coloured wings that look like crisp layers of cellophane. Males can be distinguished from females by the number of blue bands they display - males have five while the females have just four. Adult blue-banded bees typically grow to between 10mm and 12mm. The species is found all over Australia, except in Tasmania and the Northern Territory. It's also native to Papua New Guinea, Indonesia, East Timor, Malaysia, and India, so it enjoys a pretty healthy range, spreading out everywhere from urban areas to open fields and dense, tropical forests.

From the Newsletter of the Beekeepers' Association of the Australian Capital Territory, Canberra.

## New honey bee sub species found?

In temperate China: [Apis mellifera sinisxinyuan](#).

Editor's query - can it really be *A. mellifera* when the Chinese native bee is *A. cerana*?

## Stolen!



A new Commercial hive. The hive has no identification marks apart from the unique way it was made with no nails, only countersink pozidrive screws or staples, and glue. *Bob & Pauline Gosling*

## Laser intended for Mars used to detect 'honey laundering'

A laser tool funded by the European Space Agency to measure carbon on Mars has been used to detect fake honey. The counterfeit goods trade might more commonly be associated with handbags and watches, but it turns out that the world of honey trading is also a murky one, riddled with smuggling and fakery.

According to a *Food Safety News* investigation, more than a third of honey consumed in the US has been smuggled from China and may be tainted with illegal antibiotics and heavy metals. To make matters worse, some honey brokers 'create' counterfeit honey using a small amount of real honey, bulked up with sugar, malt sweeteners, corn or rice syrup, "jaggery" (a type of unrefined sugar) and other additives -- known as honey laundering. This honey is often mislabelled and sold on as legitimate, unadulterated honey in places such as Europe and the US.

Thanks to a new laser "isotope ratio-meter" developed at the Rutherford Appleton Laboratory at Harwell, this fake honey can be detected. The device has small, highly accurate lasers designed to be sent into space to look for trace amounts of gas in very small samples. The laser has an adjustable optical frequency or "colour" that can be beamed at a gas sample. The frequency can be adjusted until a certain frequency that is specific to a particular gas is reached, and the light is then partially blocked.

"Each molecule, and each of its isotopic forms, has a unique spectrum. If, on the other hand, you know what you are looking for, you can simply set the laser to the appropriate frequency," explained Damien Weidmann, Laser Spectroscopy Team Leader at RAL Space.

The relative levels of different isotopes can reveal information about the history of the formation of the molecule. Weidmann is keen to use the system to examine the methane in the Martian atmosphere, looking at the ratios of carbon isotopes to identify its origin. A bacterial origin would indicate life had occurred on Mars.

The same tool can be used to scan the carbon dioxide released from burning a few milligrams of honey olive oil, chocolate, wheat or whatever to see whether it is a cheap substitute or not.

RAL Space has teamed up with UK company Protium MS to develop a small portable device that can be used to probe for counterfeit foods -- not just honey. This will provide a carbon isotope fingerprint that shows the product's provenance. "We will know, in the case of olive oil, if it genuinely comes from Sicily or if it is a counterfeit fake."

David Bell, director of Protium, explains that honey is a "classic example" because "it's expensive to buy, but it is easy to make a counterfeit product that looks very similar using sugar instead of bees." Laser analysis of this sort can match the honey to the flowers of a specific geographic region.

## Moonlight mating

This ensures that queens mate only with selected drones using hives with upper and lower entrances. Drones and queens are confined above a QX and kept in the dark during the day. The worker bees can, however, make their way through the queen excluder to the lower entrance and out of the hive to forage. After 6pm, once the feral drones have stopped flying, the bottom entrance is closed and the top entrance opened allowing the queens and drones out to mate. The upper entrance is left open for 3 hours - by which time mating is completed and the queens return to the hives. That entrance is then closed and the bottom one re-opened for the worker bees to use during the day. From the West Cork BKA website.



## Introducing a queen - 100% success!

The following is an idea from Dennis Chow, Reigate BKA, that 'guarantees' 100% success!!!

"Last year I saw a Polish bee farmer replacing his old queen by dipping her into a jar of honey, and then spooning her into the hive. So I decided to have a go last year.

I took a queen from her cage and I dropped her into honey; this covered her completely. I then spooned her out onto the frame top bar. The bees rushed to lick the honey and rescue her - which only took five minutes. The bees then groomed her until she was completely dry and was running on the comb. An hour later, I double checked and saw her walking on the comb without any fuss. The next day, she was still alive - this method worked very well.

On another occasion I was transferring bees into my observation hive for a village show. I couldn't find the queen, so I had to introduce a new one quickly. I took a new queen from my mini mating box and introduced her into the colony the same way - dipped into a jar of honey - and hoped for the best. An hour later when I got to the show, I was delighted to find her walking on the surface of the comb with the bees. It was a great show, and all the visitors were happy to see the bees and the queen."

*Don't use shop honey for this as it may contain AFB spores. Ed.*

## Bopping bees rock the hive

We know that bees tell each other where food is by performing a dance on the honeycomb. Now, with the help of lasers and strobe lights, researchers have discovered how bees attract audiences to the dance floor. A honey bee back from a foraging mission uses a coded dance, including a side-to-side 'waggle', to tell her nest mates where she has been. Soon, other bees arrive and copy her moves before flying off to find the food. "But the complex interaction between honey bee dancers and their followers is far from being understood," says Jurgen Tautz of Wurzburg University. One of the key puzzles is how a dancing bee attracts her audience. Bees often arrive from cells elsewhere in the honeycomb where they couldn't possibly see the dancer, and probably couldn't feel the low-frequency vibrations of the waggle dance over the higher pitched buzz of the colony. Perhaps the answer lies in the structure of the wax comb itself. The comb is slightly elastic, so it won't vibrate like a rigid solid. Instead, a vibration radiating from a waggle dancing bee may make the cell walls swing progressively more out of time with each other. Eventually, there would be a phase reversal - one wall of a cell starts to vibrate in the opposite direction to the other wall. Any bee in the vicinity would feel her feet wiggling in opposite directions - a signal she might be expecting.

To test the idea, Tautz's team simulated the low-frequency vibrations of a waggle dance in a cell of an empty bee hive, and measured the response in other cells with a laser. Sure enough, they found phase reversals in a complex pattern of single cells up to seven cell widths away. With strobe lights and video cameras, the team also recorded more than 132 dancing bees recruiting 471 followers in an active colony. As Tautz predicted, most of the followers came from a region of the hive where the cell walls were vibrated out of synch with each other. Courtesy of Essex BKA

## The Vita Photo Gallery

This is a free resource for beekeepers across the globe to use in their public talks. You may download a wide range of images about bees and beekeeping to use in your live presentations. Many also use it as personal learning material. <http://www.vita-europe.com/gallery/>

## Ged Marshall

In his talk 'A Year in the Life of a Bee Farmer', Ged Marshall told us he has seen less damage to honey bees since neonicotinoids came into use; he thinks because they are so highly regulated in their use, but he too, is worried about what farmers will use in their place during the 2 year ban. Ged runs a very successful honey farm, 'British Honey Producers' at Oakfield Farm, Steeple Claydon in Buckinghamshire with 250 colonies producing roughly 10 tons of honey per year, 20% of which he packs himself. The rest goes to other beekeepers or to Rowse which packs for the supermarkets.

Ged also produces queens, 1,500 last year and rising! So his business is now 20% full colonies and 80% nucs. He moves his hives often - some up to 7 times per year - he will go anywhere for forage - but he doesn't go to the heather now because he has found borage much more saleable and good for cut comb. Because he is overstretched during the season, he doesn't have time to 'fiddle about' with bees and his assessment of colonies is more a question of 'spot the odd one out'.

He doesn't attempt swarm control because he is not in a built-up area but he has bait hives at all his sites and expects to collect more swarms than he loses. Swarms are re-queened, because he doesn't want swarmy bees, and then he builds them up for the following year. Ged buys Buckfast queens from Denmark and treats all his colonies when the last supers come off in Autumn. He also re-queens in September, sometimes in October, and once in November! The Cheshire Beekeeper

## Honey bees and honey as monitors for heavy metal contamination

Six honeydew samples of known geographical and botanical origins and eleven honeybee samples were analyzed to detect possible contamination by the thermoelectric power plants in Mugla, Turkey. The thermal power plants were 10-22 km away from the hives. The levels of copper, cadmium (Cd), lead (Pb), zinc, manganese, iron, chromium, nickel, and aluminum in the honeydew samples were similar to the values found in other recent studies. It was found, however, that the contamination levels of the toxic elements such as Pb and Cd in honeythe bee samples were relatively higher than those of the honey samples. So the bees themselves may be better bioindicators of heavy metal pollution than honey. [Details.](#)



The image shows the complex eye (x120) of a Western honey bee, *Apis mellifera*. Each black segment is one of thousands of tiny lensed units. Each eye unit supplies a small section of the whole image that the bee sees.

This picture won the 2015 Nikon Small World Photography competition.

## Swarm collection

Why do I collect swarms? Well it started when I thought it would be an easy way to add an extra colony in my second year of beekeeping but I quickly came to realise that, as well as being great fun, it is something that needs to be done to help those affected by the arrival of a swarm. If you've never experienced it, being close to a swarm in flight is spectacular – very noisy and the air full of bees seemingly tearing around without purpose - some people are quite blasé about the experience, many are nervous and a few are genuinely terrified. When they telephone, the first thing I do is reassure them that the bees will quickly settle if they haven't already and will be very unlikely to sting unless disturbed, and then get some information on the location of the swarm - so I know what gear to take and what to expect - and then make an appointment to collect the swarm, usually in the late evening so I can collect the scouts without having to make two trips.



On arrival I take a look at the swarm and its location and decide how I am going to tackle it and what the risks are to me and others, for example for a swarm on a roadside I'll put out some "caution - bee swarm" notices to warn pedestrians and cyclists. I'll then go through with the person who called me out what I will be doing and roughly how long it will take and what they should expect to see. By this stage the majority of people are very interested in the swarm and bees in general so it's a good opportunity to get some bee PR in!

The first swarm I ever collected was hanging in a neat cluster from the tip of a branch half a metre off the ground in the middle of a lawn, this is pretty easy I thought – I've not had one like it since! The majority are in some form of vegetation but often wrapped around multiple branches or on the trunk of a tree, sometimes inside a hedge, on the face of a wall or fence and once a huge swarm under the eaves of a house outside the children's bedroom window! I've collected swarms from a front garden wall with the takeaway delivery driver stopping to watch for half an hour, from a tree in the street on a Friday evening with a raucous crowd of drinkers looking on, from under a wheelbarrow whilst being live-streamed over the internet by the householder, from the Ipswich records office and on more than one occasion from very close to my own hives but they couldn't possibly have been mine could they...

Other than more bees, which I don't really need, what do I get out of it? I suppose I have the satisfaction of "coming to the rescue" and I have met people from all walks of life who are invariably interesting and almost without exception are interested in bees and a lot less nervous of them when I leave than when I arrived.

If anyone is interested in learning the arts of swarm collection I'm very happy to have some assistance on call outs or if anyone would like a swarm passed on to them this spring then let me know on 07889 028573 or richard@chezallen.co.uk.

One last thing – if you do collect a swarm, please don't pick them up until late in the evening when the scouts are back, otherwise a cluster of a few hundred confused scouts is left behind to sting the family dog! *Richard Allen*

*Occasionally, a swarm is put into a skep but, on returning in the evening to collect them, you find they have gone. In between their taking and your return, the bees' debate on where to go came to a conclusion. Once the queen is in the skep, a QX will keep her & them there. Ed.*

## Capturing high swarms

"On arrival, I found the bees on a thin branch some 15 feet off the ground. In similar circumstances, an old beekeeper from North Carolina suggested tying a weight on a string, throwing it over the branch above the swarm (or using a bow & arrow); the string is used to pull a stronger cord up over the same branch. Then pull a frame of brood up as near to the swarm as it can be got. The idea is that the swarm will then move onto the comb which can then be lowered to the ground." *Kevin Gow, Mount Diablo,*

## Swarm calls from the public

Please make a note of how many you get and, at the end of the year, let us know how many you have had. There will be a consolation prize of a packet of foundation for whoever has had the most.

## Drone fertility optimization - using nutritional supplements in spring

In northern apicultural regions the supplemental feeding of honey bee colonies in spring is essential for colony build-up. The impact of pollen and syrup feeding on drone production and sperm quality is not well-documented, but may improve fecundation of early-bred queens. We measured the impact of feeding sucrose syrup, and protein supplements to colonies in early spring in eastern Canada. Drones were reared under different nutritional regimes and mature individuals were then assessed for to size, weight and semen quality (semen volume, sperm count, and viability). Results showed significant increases in drone weight and abdomen size when colonies were fed sucrose and a protein supplement. Colonies receiving no additional nourishment had significantly less semen volume per drone and lower sperm viability. [Reference](#)

## 'Bees in space'

This was one of the excellent presentations and films that those who spent a weekend at the Central Association of Bee-Keepers' conference in Kenilworth in mid-November, 2015.

Did you know that it is possible to measure the electrical activity from the nervous system at the base of a sensory hair on a bee? Can you imagine the tedium of getting that sensor in place? Some of us now know! That process shows us that bees can detect the small electrical fields on key areas of a flower and the flower electric fields can be shown using electrostatic paint, the stuff they spray on modern cars.

So for those many who weren't there, you missed a treat, a look into exciting areas of research, presented in a completely accessible manner that can excite you even further about the amazing world of our bees. Don't miss it next year. Join the CABK! *Andrew Heath, Warwickshire*



## Flowers tone down their iridescence to avoid confusing bees

Iridescent flowers are never as dramatically rainbow-coloured as iridescent beetles, birds or fish, but their petals produce the perfect signal for bees.

Bees buzzing around a garden, looking for nectar, need to be able to spot flower petals and recognise which flowers have food for them. Professor Beverley Glover from the University of Cambridge Department of Plant Sciences and Dr Heather Whitney from the University of Bristol found that iridescence - the shiny, colour-shifting effect seen on soap bubbles - makes flower petals more obvious to bees, but that too much iridescence confuses bees' ability to distinguish colours.

They and their colleagues found that flowers use imperfect iridescence on their petals, which doesn't interfere with the bees' ability to distinguish subtly different colours, such as different shades of purple. Perfect iridescence, for example as found on the back of a CD, would make it more difficult for bees to distinguish between subtle colour variations and cause them to make mistakes in their flower choices.

"In 2009 we showed that some flowers can be iridescent and that bees can see that iridescence, but since then we have wondered why floral iridescence is so much less striking than other examples of iridescence in nature. We have now discovered that floral iridescence is balanced to make flower detection by bumblebees easier but without interfering with their ability to recognise different colours."



Bee on non-iridescent flower  
Photo: Edwige Moyroud

Bees use 'search images', based on previously-visited flowers, to remember which coloured flowers are a good source of nectar. "On each foraging trip a bee will usually retain a single search image of a particular type of flower so if they find a blue flower that is rich in nectar, they will then visit more blue flowers on that trip rather than hopping between different colours. If you watch a bee on a lavender plant, for example, you'll see it visit many lavender flowers and then fly away - it won't usually move from a lavender flower to a yellow or red flower."

This colour recognition is vital for both the bees and the plants, which rely on the bees to pollinate them. If petals were perfectly iridescent, then bees would struggle to identify and recognise the colours worthwhile visiting - instead, flowers have developed an iridescence that allows them to signal to bees in their own visual language.

The researchers created replica flowers that were either perfectly iridescent (using a cast of the back of a CD), imperfectly iridescent (using casts of natural flowers), or non-iridescent. They then tested how long it took for individual bees to find the flowers.

They found that the bees were much quicker to locate the iridescent flowers than the non-iridescent flowers, but it didn't make a difference whether the flowers were perfectly or imperfectly iridescent. The bees were just as quick to find the replicas modelled on natural petals as they were to find the perfectly iridescent replicas.

When they tested how fast the bees were to find nectar-rich flowers amongst other, similarly-coloured flowers, they found that perfect iridescence impeded the bees' ability to distinguish between

the flowers - the bees were often confused and visited the similarly-coloured flowers that contained no nectar. Imperfect iridescence, however, as found on natural petals, didn't interfere with this ability, and the bees were able successfully to locate the flowers that were full of nectar.

"Bees are careful shoppers in the floral supermarket, and floral advertising has to tread a fine line between dazzling its customers and being recognisable," says Lars Chittka from Queen Mary University of London, another co-author of the study.

"To our eyes, most iridescent flowers don't look particularly striking and we had wondered whether this is simply because flowers aren't very good at producing iridescence," says Glover. "But we are not the intended target - bees are, and they see the world differently from us."

"There are many optical effects in nature that we don't yet understand. We tend to assume that colour is used for either camouflage or sexual signalling, but we are finding out that animals and plants have much more to say to the world and to each other."

Glover and her colleagues are now working towards developing real flowers that vary in their amount of iridescence so that they can examine how bees interact with them.

"The diffraction grating that the flowers produce is not as perfectly regular as those we can produce on things like CDs, but this 'advantageous imperfection' appears to benefit the flower-bee interaction," says Whitney. *Current Biology* 25 Feb 2016.

Calendar		Members of the six Associations which form the Suffolk Beekeepers' Association are welcome to attend any or all these meetings. There will be other meetings but details were not available at the time we went to press.
Ipswich & ES BKA winter meetings are held in the Scout Hall, Kesgrave IP5 1JF from 7:30pm.		
Sun 1 May	I&ES Humber Doucy Lane apiary opens every Sunday from 2:00 pm.	Ipswich & ES Malcolm Marchant
Sun 15 May	Queen raising course (& 3 following Sundays) at Dallinghoo. <a href="#">Please book.</a>	Ipswich & ES Jeremy Quinlan
Wed 1 & Thu 2 June	<b>The Suffolk Show</b>	Suffolk BKA Sue Horrex: <a href="#">contact</a>
Tue 7 June	<i>Education Within the BBKA</i> , Simon Croson: Red Gables, Ipswich Road, Stowmarket IP14 1BE. 7:30pm.	Stowmarket BKA
Sat 11 June	Best Practice Day at Stowmarket <a href="#">Course fully booked.</a>	Suffolk BKA Jeremy Quinlan
Sun 19 Jun	<b>Bee Tea and Skep making Walk Farm.</b> <a href="#">Please book.</a>	Ipswich & ES Jeremy Quinlan
Sat 9 Jul	<b>Apiary Safari; 10-4.</b> <a href="#">Please book</a>	Ipswich & ES Jeremy Quinlan

## Calling all potential tutors

Have you ever wanted to gain some experience of teaching, or wished to gain a teaching qualification? Have you ever wished to repay the efforts of the association members who helped you get started in beekeeping? Have you ever wished to help new beekeepers to get started in beekeeping? If so I would love to hear from you as I may be able to help you achieve your objective. Please call me or email me for a discussion. *Jeremy Quinlan*

## Wildlife Gardening Forum - free membership

See: <http://www.wlgf.org/index.html>