THE IPSWICH & EAST SUFFOLK BEEKEEPERS' ASSOCIATION

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Newsletter for May - July 2017

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

The colour for this year's queens is yellow.

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

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The Suffolk Show 31st May & 1st June

Our usual appeal:

Please enter something in the Show!

It truly isn't that difficult; just read the Schedule and take some care.

If you don't have your own honey, you can still buy some and enter the cooking classes, these entries are the ones general public are most interested in as they can recreate them at home.

The schedules and both the online entry form and the downloadable entry form may be had from the website or contact Helen Davies (01473 742862) for paper ones.

If you are not able to bring your entries to the show yourself, there are others who will gladly do this for you - please just ask one of our committee members.

This is our show; last year, West Suffolk managed 199 entries in their honey show, so ours should be even bigger!

Practical beekeeping training every week

We plan that, as last year, to open our Association apiary at 2:00 pm every Sunday afternoon **from 30th April**. There will be something different every week but the bees will be the same. This is an opportunity for those who are not yet confident in their beekeeping to advance their knowledge and improve their skills. See link. **Please support us and use the facility.**

Mock Basic Assessment 20th May

If you have thought about taking the BBKA's Basic Assessment but found the thought of it off-putting, come to Jeremy's apiary at The Old Rectory, Dallinghoo IP13 0LA at 2pm on Saturday 20th May and experience a gentle run-through. If you have been keeping bees for two years, it really isn't difficult.

Non Beekeepers' Afternoon 2nd July

For many years, we have held an annual Bee Tea. Recently, numbers have been in decline - even when we also offered skep-making - so this year, there won't be a Bee Tea as such.

We will, however, continue to offer new beekeeping enquirers and their families, an opportunity to look into a hive of bees. This year, that will be on Sunday 2nd July from 2.00 pm.

As we must have bee suits for everyone, we must know in advance who is coming. Those interested are asked to register at the Suffolk Show - or afterwards with our Secretary, Richard Allen - details above. Those who just turn up may be disappointed.

Help wanted with this newsletter

If you would like to try your hand at helping to produce this newsletter, please get in touch with Jeremy (see details above).

Apiary Safari - Saturday 8th July.

Conducted by Keith Morgan, our Regional Bee Inspector, we will visit several garden apiaries of new and established beekeepers in the Felixstowe peninsula. Meet at 10:30 at the Kirton and Falkenham Pavilion, Back Road, Falkenham IP10 0PW. Finish about 4.00pm. Tea and coffee provided. Bring your own sandwich lunch. With many thanks to David Adams & the local beekeeping team.
RSVP by 30 June to JeremyQ@tiscali.co.uk / 01473-737700.

Wherstead Park

While the ideal would still be an apiary site of our own, we have had several generous offers of tenancies. In the end, we accepted a proposal from the East of England Co-op for a site at their Wherstead Park headquarters, overlooking the Orwell Bridge. Coincidentally, we were also offered a good 4m x 4m hut, so have bought it and have re-erected it there; we had some help putting the roof back! Very many thanks to all who helped.
Although we now have two apiaries, training will continue at Humber Doucy Lane this year.

Sandra Gray promoted to Regional Bee Inspector, South-East

Our congratulations to Sandra! Up to now, she has been a Seasonal Bee Inspector but has also been a regular volunteer for other DEFRA work in the winter - like checking flowers for unwanted bugs in Stanstead Airport - and finding some smaller than a bee egg. No doubt, her old seasonal job will soon be advertised.

It's a big area and, as she isn't moving out of Suffolk, she will have many miles to drive. We wish her all the very best with it.

Essex Standard - Saturday 25 September 1880

Print Download Tag Comment

...say Lessons. ...of Town. ...entlemen on ...lso an Adult ...Lessons, ...soon as ... Street, [2408 ...ntry of ...that she ...NS (by ...CUPS ... 2 p.m.,

SUFFOLK BEEKEEPERS' ASSOCIATION.—On Tuesday last the first Exhibition of the above newly-formed Society was opened in the Fine Art Gallery, Ipswich. There was a very good exhibition of hives and other articles connected with bee-keeping; there was also a liberal prize list, and among the successful exhibitors were Messrs. Green and Son, of Rainham, who took 2nd prize for a moveable comb hive, including cover and stand. For the best exhibition of run and extracted honey, Mr. C. N. Brooks, of Mistley, was first, with a stand of 40 jars of very superior honey. This gentleman also exhibited in the loan exhibition a bar frame stand, with a comb and honey as worked. Dr. Norman, of Myland, also showed in the same exhibition a sectional super, and one of Walton's extractors. On the evening of the opening day, Dr. J. E. TAYLOR delivered an interesting lecturette, in the course of which he dwelt upon the beneficial influence of bees upon horticulture and agriculture.

Thank you Terry Mason

New Members

We welcome our new members:
Matthew Bayley, Jamie Boyce, Russell Brand, Kim Brignell, Ralph Hardy, Tom Harland, Roger Hayward, Biju John Mike Lloyds, Felicity Morphey, Christopher Milton, Arlen Mulder, Richard Pennie, Aaron Smith, Naomi Sturges and David Tomlinson.

Wanted

Commercial brood boxes, frames, supers and nucs.
Tig Thomas: 01394 460712; tig.thomas@btinternet.com

Library News

Have a look at our list of bee books on the I&ESBKA website – you will be surprised at just how many lovely books we have! Some are very old, some are brand new. You are welcome to borrow them, just send me an email via the link on the website and I will bring your choices to the next monthly meeting at Kesgrave. If you have any suggestions for books not on the list, let me know and I will order a copy for the library. I bring a copy of the book-list to our meetings each month so, even if you don't use a computer, you can still choose a book.

Recent additions to the library include 'Plants for Bees' by Kirk & Howes; this is a beautiful, comprehensive book for beekeepers and gardeners who want to fill their garden with plants beneficial to all kinds of bees, not just honey bees; 'Keeping Healthy Honey Bees' by Aston & Bucknall, which is tipped to become a modern classic; and 'The BBKA Guide to Beekeeping' by Davis & Cullum-Kenyon. Happy reading! *Gillian*

Suffolk BKA News

Following its AGM, Laurie Wiseman (Leiston) became the President of the Suffolk Beekeepers' Association in succession to Tony Payne (Stowmarket).

New County Secretary

Helen Davies (I&ES) became the County Secretary in succession to Ian McQueen (I&ES) who had held the job for 14 years! As Helen is also assisting Sue Horrex organise the Suffolk Show (with prime responsibility for the honey show), she has much to do.

New County Education Secretary

Jane Corcoran (West Suffolk) has taken over from Jeremy Quinlan. Her contact details are: jane_corcoran@hotmail.com; 01284 850470

BBKA Examinations Secretary for Suffolk

This is now Kevin Thorn (also from West Suffolk). Contact: kevinthorn@me.com; 07557 418418;
75 Head Lane, Great Cornard CO10 0JS.

We wish all of them every success in their new roles.

Karl von Frisch Corrected

Do honey bees have two discrete dances to advertise food sources? This was the title of one of two key papers (this one by Gardner, Seeley & Calderone, 2012) quoted by Dan Basterfield in his talk *The Honey Bee Dance Language* at the BBKA's Spring Convention earlier in April. The other paper was by Griffiths et al, 2012. Both seem to be copyright by Springer so are currently unavailable to you and me without payment.

Contrary to what we were all taught in our beginners' classes and, most fascinatingly, the answer to the question is "No!" Glass-walled observation hives and infra-red light enabled researchers to observe or video, and decode waggle runs. These show that for food sources only 10 metres away, there was no discernible direction indicated - but at 30 m and outwards, it was clear that an accurate direction was being indicated. So Karl von Frish, Nobel Laureate, didn't get it quite right. We shall all have to change what we teach.

Wings as Impellers: How Honey Bees Fan

285 million years of evolutionary pressure have perfected and optimized insect wings for flight. But the wings are often used for secondary tasks too. Honey bees use their wings to ventilate their cavity and disperse pheromones. When ventilating the nest, bees grip the surface of the comb or nest entrance and fan their wings to drive airflow through it. This behavior promotes convective cooling and/or gas exchange. Both scenting and cooling require wing movement while the bee is otherwise stationary. Thus the wings had to be co-opted from inducing propulsion to also serve as impellers, which presents several physical challenges to an insect.

"First, the primary direction of fluid movement generated by the wings must be shifted from downward (as in flight), to horizontal (as in fanning). Second, the kinematics of flapping must be altered to avoid disadvantageous contact with the solid surface, which could cause wing damage, reducing flight performance and survival." To achieve this bees reduce their flapping frequency by about 30%.

To check out the neat airflow patterns honey bee fanning creates, watch the video. To read the original paper, visit the Journal of Experimental Biology.

Beneficial Bacteria in Bees

Is a healthy honey bee gut the secret to colony health? Recent studies suggest that what bees consume and how they share the beneficial microorganisms among nest-mates may protect them from disease. Bees pick up some of these beneficial bacteria from the nectar in flowers. If good gut microbes = healthy bees, enterprising beekeepers think why not feed them probiotics? A new review "Beneficial microorganisms for honey bees: problems and progresses" by a team of researchers in Bologna, Italy suggests we're not quite ready to start pouring syrup laced with good bacteria into colonies yet.

We know that most bees acquire their microbial community shortly after emerging as adults through cell cleaning and other early behaviors. These acquired symbiotic microorganisms help break down the tough pollen coat of stored pollen, produce important amino acids and other nutrients. Cage studies have shown some protective effects of feeding honey bee symbiotic bacteria compared to controls, with significant decreases in the establishment of gut pathogens in the "protected" groups. Despite some protective gain, the mortality of the bees fed supplemental beneficial microbes remained high. This "does not prove the efficacy of these microorganisms, since the reduced mortality between 10 and 20%, although significant, is biologically irrelevant." At such levels feeding good bacteria is simply delaying death, not preventing it.

We are just beginning to understand the complex interactions of the honey bee microbiome. As the authors suggest, it may prove useful to apply the beneficial microorganisms prior to infection, so they have a chance to establish themselves and can then provide protective benefits against low natural rates of infectious disease. The current data are simply too sparse and not standardized enough on dose, timing and strains used to draw firm conclusions.

Beekeepers to Blame for Honey Bees' Problems World-Wide

In a research essay published in April in the Entomological Society of America's *Journal of Economic Entomology*, Robert Owen, an Australian PhD student, argues that human activity is the key driver in the spread of pathogens afflicting the European honey bee. In particular:

Regular, large-scale, and loosely regulated movement of bee colonies for commercial pollination. (For instance, in February 2016 alone, of the 2.66 million managed bee colonies in the United States, 1.8 million were transported to California for almond crop pollination.)

Carelessness in the application of integrated pest management principles leading to overuse of pesticides and antibiotics, resulting in increased resistance to them among honey bee parasites and pathogens such as the *Varroa destructor* mite and the American Foul Brood bacterium, *Paenibacillus larvae.*

The international trade in honey bees and honey bee products that has enabled the global spread of pathogens such as *Varroa*, tracheal mite, *Nosema cerana*, Small Hive Beetle and the fungal disease, chalkbrood.

Lack of skill or dedication among hobbyist beekeepers adequately to inspect and manage colonies for disease.

What are YOU doing to increase your own knowledge and beekeeping skills?

If you can't keep bees well, should you be keeping them at all?

Genic Male Sterility OSR Best for Bees!

Rothamsted Research recently published a study of OSR varieties and their pollinator friendliness. See study for a summary and, for the full paper: http://dx.doi.org/10.1111/gcbb.12438. Briefly, in this study, varieties produced with three different methods were tested. The scientists compared OSR varieties representing open-pollinated (OP), genic male sterility (GMS) hybrid and cytoplasmic male sterility (CMS) hybrid breeding systems. Analyses of the data demonstrated that while the amounts of nectar and sugar were similar in varieties within the same breeding system, they varied between the breeding systems, being significantly greater in GMS hybrids than in CMS hybrids and open-pollinated varieties.

We now need to know which breeding systems are used to produce the varieties commonly available and recommended to farmers by the Agriculture and Horticulture Development Board (AHDB) - and how these compare with the 'natural' ones. I have looked at the AHDB list but cannot wring out of it the information I should like to have. Can anyone help me, please?

The Birds & the Bees - well, just the Bees

This was the title of another excellent talk at the BBKA's Spring Convention - this one by Jamie Ellis from the University of Florida Bee Lab www.ufhoneybee.com/.

He compared a queen's ovaries to strings of sausages, explained why drones seek the nearby drone assembly areas (DCA) - they patrol over 2-5 hour period but can fly for only half an hour so it is economy of food and effort. Queens make a 15 minute flight to a further DCA and spend only 5 minutes there. Mating takes only 1-2 seconds, Drones' eversion causes a loss of haemolymph which kills them so queens need to drag the last of the sperm from them. It is the Koenigers' theory that the hairy part of the endophallus removes the 'mating sign' from the previous drone but he thought this not yet proven.

While drones carry 5-7 m sperms and some 12-17 mate, these fill the queen's lateral oviducts; as the spermatheca holds only some 10m, the rest are voided. The sperms retained are nourished for the rest of the queen's life; the spermatheca is surrounded by a network of tracheoles to provide oxygen.

The different drones' contributions may take a year to mix. Nevertheless, in any colony, there are usually only six dominant sub-families so not all drones mating are represented in the colony.

Queens' Mating Sign from Two Drones

Co-incidentally, I have just stumbled across a 2011 Journal of Apicultural Research paper on this subject by the notable Polish bee researcher, Jerzy Wyoke. DOI 10.3896/IBRA.1.50.4.04.

Queens return from successful mating flights with a mating sign, which consists of chitinized plates of drone endophallus filled with mucus. My summary of his summary is that after analysing some queens' mating signs, he found additional parts which had originated from drones which had attempted to mate but had failed to remove the mating sign of their predecessor. In these, the mating sign originated from two drones.

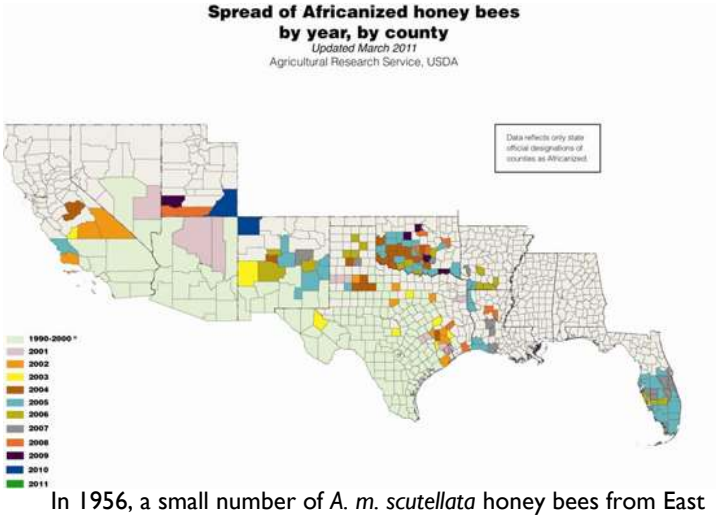
I offer the conclusion that while the queen may mate with 7-17 drones (Winston), several more have attempted to do so.

Giving-up Sale

National equipment, 3 frame manual extractor, honey tank, strainers, books, etc., etc.
Apiary at Capel St Mary: land owner may be prepared to keep the hive(s) there after discussion
No sensible offer refused. Contact pepj2015@gmail.com

Africanized Honey Bees' Genes analysed

In a new study, researchers sequenced the genomes of Africanized bees to find out what makes them so extraordinarily successful in the Americas.



In 1956, a small number of *A. m. scutellata* honey bees from East Africa were accidentally released in Brazil. A biological invasion of unprecedented magnitude followed. These bees inter-bred with those kept by local beekeepers and these hybrids, now called Africanized or "killer" bees and known for their aggressive behavior, spread rapidly and now occupy much of north and south America.

In this study by a research group at Uppsala University and colleagues from UK and Brazil, the genomes of 32 Africanized bees were sequenced and compared with those of honey bees collected from all over the world.

Although most of the Africanized bee genome is similar to that of *A. m. scutellata*, one region of the genome more closely matched bees from Europe; these were present in Brazil before the Africans arrived. This suggests that the European version of this part of the bee genome gave the Africanized bees a selective advantage.

The study highlights how hybridization between different populations is an important process in evolution. This produces new combinations of genetic variants for natural selection to act on.

Beware By-catch

In an attempt to forestall the Asian Hornet, *Vespa velutina*, beekeepers may be thinking of putting out wasp traps. In a conversation with Keith Morgan, the Regional Bee Inspector, he advised against this. There are two reasons for this:

Ordinary wasp traps catch far too many other insects - native hornets, moths, etc. In the fishing industry, this is known as 'by-catch'. Traps for the Asian Hornet should be modified to exclude our hornet, which is a little larger, and allow the escape of smaller creatures; details from the NBU website.

Wasps have a valuable place in nature. Unless you are unfortunate enough to have too many wasps' nests near your apiary, they are best left alone. 'Near' means near! While honey bees have at least a 3 mile foraging radius, wasps seldom exceed 100 yards. Colonies overcome by wasps were probably too weak to survive without undue mollycoddling.

It is better to help your bees defend themselves against wasps. This 'Top Tip' comes from Warwickshire BKA - to which go our thanks. "Take a small clear plastic fruit punnet (the kind you might buy grapes in from the supermarket) cut a small 'doorway' at each end and fix over the entrance of your hive with drawing pins (entrance block in). The bees quickly work out how to get into the hive but the wasps seem incapable of working it out. We used this very successfully on all our colonies last autumn."

Australians, Bee Alert!

An Australian national analysis of 13 years' data on bites and stings from venomous creatures reveals their towns and cities are hot-spots for encounters. The research also shows that of all Australia's many venomous creatures, it is bees and other insects - not snakes, spiders, or jellyfish - that pose the biggest public health threat.

Including fatalities, venomous stings and bites resulted in almost 42,000 hospitalizations over the study period. Bees and wasps were responsible for just over one-third (33%) of hospital admissions, followed by spider bites (30%) and snake bites (15%).

Overall, 64 people were killed by a venomous sting or bite, with more than half of these deaths (34) due to an allergic reaction to an insect bite or sting that caused anaphylactic shock.

Snake bites caused 27 deaths. Importantly, snake bite envenoming caused nearly twice as many deaths per hospital admission than other venomous creatures; only one was a snake catcher.

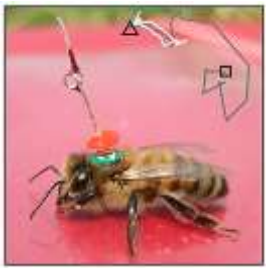
Bees and wasps killed 27 people. Only one was a beekeeper. Tick bites caused three deaths and ant bites another two. Box jellyfish killed three people. No spider bite fatalities were registered.

Public health expert at the Australian Venom Unit at the University of Melbourne, Dr Ronelle Welton, led the study, published in the *Internal Medicine Journal*. She says she was surprised to find so many deaths and hospitalizations up and down the populated coastal areas of Australia. She said: "More than half of deaths happened at home and almost two-thirds (64%) occurred, not in the isolated areas we might expect, but rather, in major cities and inner-regional areas where healthcare is readily accessible,"

Researchers believe one of the reasons that anaphylaxis from insect bites and stings has proven deadly may be because people are complacent, do not seek medical attention and anaphylaxis can kill quickly. While three-quarters of snakebite fatalities at least made it to hospital, only 44% of people who died from an allergic reaction to an insect sting got there.

According to Dr Welton: "Perhaps it's because bees look so innocuous that most people don't really fear them in the same way they fear snakes. Without a previous history of allergy, you might get bitten and, although nothing happens the first time, you may have then developed an allergic sensitivity."

How well can honey bees find their way home?



It depends! If they've never left the hive on an orientation flight, and they were released within 250 m of their colony, the bees attempted flights, but never found their way home.

Bees perform short-range and long-range orientations flights. Short-range flights are performed in the immediate surroundings of the hive, while on a long-range flight bees fly out a greater distance to explore a narrow wedge of the landscape. The naive bees that had never left the hive had not yet learned the landmarks in their vicinity.

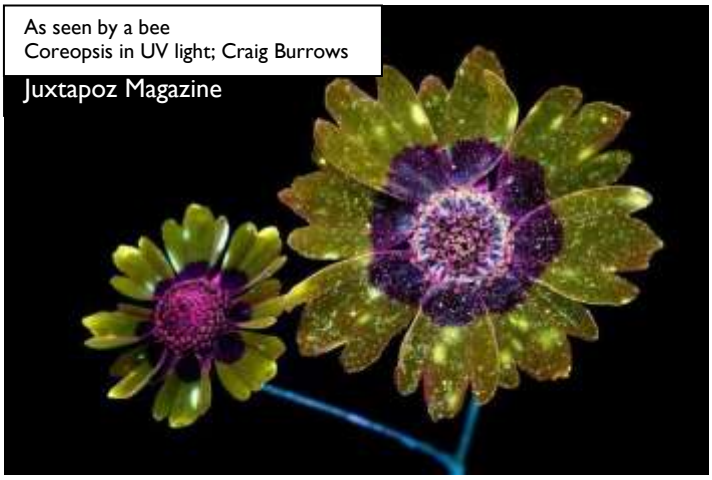
The bees that had gone on the long orientation flights could quickly find their way home, if they were released near the sector they had previously explored. But when they were released in an unexplored area, it took them significantly longer and their flight path was more haphazard.

When does cheating pay? Worker reproductive parasitism in honeybees

The notion that honeybee colonies are harmonious, isolated societies in which workers selflessly sacrifice their reproductive opportunities to serve their queen has long been debunked. Like any society, honeybee colonies contain selfish individuals that pursue their own interests, or cheat, at the expense of the colony, and these individuals need to be controlled. There are numerous studies detailing the myriad ways in which selfish workers may subvert the typical dominance hierarchy of a haplo-diploid insect society. Recent studies have focussed on thelytoky, the ability to produce diploid offspring without mating, as the most significant attribute of a successful reproductive parasite. However, this study argues that thelytoky is not necessary for successful parasitism, and that even arrhenotokous societies contain specialized reproductive parasites. Using *A. mellifera* and *A. cerana* as examples, they show that the most important aspects of a would-be reproductive cheat's success are an ability to escape policing and the timing of the reproductive attempt. Also that thelytoky, while not necessary for the evolution of successful reproductive parasites, can give rise to specialized parasitic lineages and that such lineages are likely to be far more common than previously assumed.

Holmes, M.J. & Beekman, M. Insect. Soc. (2017) 64: 5. doi:10.1007/s00040-016-0515-x

[Ed's comment: So a laying worker could produce a queen.]



As seen by a bee
Coreopsis in UV light; Craig Burrows
Juxtapoz Magazine

Cushion covers, T shirts, etc.

All proceeds to bee charities.

If you have the time, I suggest you use the internet to have a look at the work of Carim Nahaboo. He draws insects in such detail his pictures look like entomological photographs

In London, forage is THE problem

Despite enjoying advantages of temperature, forage variety and an absence of pesticides, BBKA honey yield tables (lb/colony) for the last five years show that London bees don't produce much honey. And, conversely, the South East (including London) is at the top of the overwintering losses table for 2015/16 - so what is wrong?

The plight of bees in the U.K. is a well-publicised concern. In London they have a different problem: profusion - there are just too many of them. The demand for forage is growing, availability is limited. Within a 10km radius of his apiary in Bermondsey, Dale Gibson estimates there are 3,225 colonies. Every year these require 8,000 tonnes nectar and 1,600 tonnes pollen, the equivalent of 60 and 12 refuse trucks. Fortunately Greater London is, according to the Mayor of London, roughly 47% green. 'Greenspace Information for Greater London' (iGiGL), estimates 33% is vegetated public or corporate green space and the other 14% private domestic gardens.

In January, he spoke to the Ipswich & E Suffolk BKA about *Beekeeping in London*. He was until recently a stockbroker but is now a full time bee farmer and so says he has gone from the slough of job esteem to its apex. He runs Bermondsey Street Bees and has apiaries at many well-known London sites, producing a range of honeys - all excellently marketed. Too often, someone in yet another well-known organisation decides they simply must have bees so asks him for advice. Once upon a time, people plonked down a hive and thought that was that - the bees would produce some honey somehow. Now, when he is asked to survey a site, he asks: "What will the bees eat?" Usually, he is met with incomprehension: "Eat? They are bees!" The public doesn't understand that bees need flowers. Many more flower planters are needed - and far fewer plonkers!

Farmers have a moral and practical duty to feed their animals, so do beekeepers. His 'loud and clear' message is: sustainable, perennial plantings are required for new colonies. As part of his business, he also runs Apis Consulting, installing apiaries and managing hives for corporates. This directs cash from corporate clients to local greening charities. His guide to planting: *"From windowsills to Gardens"* recommends:

Extend the flowering/forage season.
Reduce mowing frequency.
Bees see blue and purple best.
Wildflowers are not the magic bullet.
Think shrubs and trees.
Keep plants simple, bees have short tongues
Clumping: bees are species-specific.

He has also written The Apis Forage Index (AFI), a guide to siting an apiary - see: http://www.bermondseystreetbees.co.uk/apis-consultancy-2/the-apis-forage-index/. This would be useful to any beekeeper.

https://youtu.be/sAY4agkIOwM is good fun too

Honey bee colonies want drones

For the past few years, we have been advised to put a super frame in the brood box - so allowing the bees to draw drone comb below it - and they do - showing they want drones. Originally, the idea was that if there were too many mites, a good way to reduce their number would be just to cut away that drone comb and feed it to the birds.

That was then. It is pretty clear that mite numbers have declined since those early days and now poor queen mating is all too common. The queens need those drones, all of them.

Seeley and Morse (1974) tell us that in wild colonies, 13-17% of the total comb area is devoted to drone comb. Half a frame is $^{1}/_{22}$ of the comb area, about 4.5%, a totally inadequate allowance. No wonder the bees put drone cells wherever they can in the only foundation given them.

Another problem with half frames is that the drone comb is always stuck to the sides of the box and, unless you are aware and carefully push in a hive tool to separate it, it tears away.

It would be much better to provide one whole frame for drone comb. While this will only be about 9%, less than the bees want, that will be a big improvement and, since it will be in a frame, it won't be stuck to the sides of the box either.

There's no need to buy drone foundation, a horizontal inch strip of wax below the top bar is all that's needed; this may be plain or worker or drone foundation. The bees will do the rest. *JQ*

Pollinators affect plant health

Not much plant sex happens without pollinator insects: Bees, flies or butterflies transfer the male pollen grains to the stigma of a plant's female style, thereby ensuring its sexual reproduction. Researchers from the University of Zurich have found that pollinator insects also have a surprisingly strong influence on plant evolution.

For their experiment, UZH professor Florian Schiestl and doctoral student Daniel Gervasi used field mustard - a close relative of oilseed rape. The researchers allowed one plant group to be pollinated solely by bumblebees for nine generations, another only by hoverflies and a third by hand. Afterwards they analysed the plants, "which differed greatly," as Florian Schiestl explains. The plants pollinated by bumblebees were larger and had more fragrant flowers with a greater UV colour component, which bees and their relatives see. The plants pollinated by hoverflies, on the other hand, were smaller, their flowers were less fragrant and they self-pollinated considerably more. The mechanism of evolutionary change is fact that different pollinators differ in their preferences and thus preferentially cross-pollinate specific plant individuals, much like a plant breeder using individuals with favourable properties. The flies' considerably lower pollination efficiency is the cause of the increase in self-pollination. The plants essentially help themselves if the pollinator transfers too little pollen.

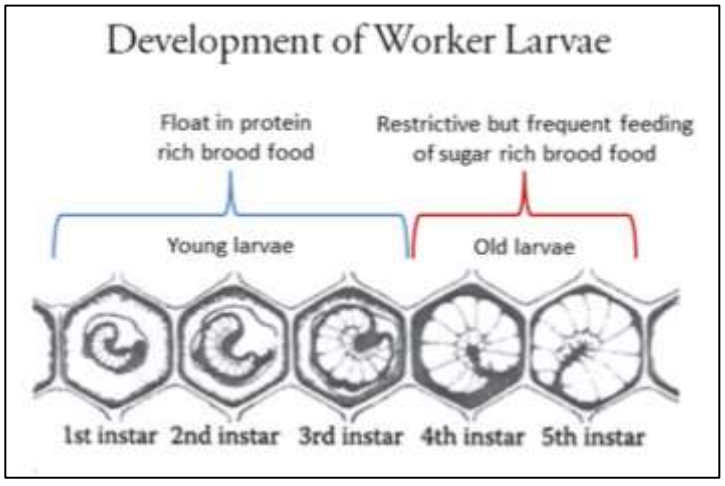
The fact that the plants change so significantly after only nine generations came as a surprise: "The traditional assumption is that evolution is a slow process," explains Schiestl. He concludes: "A change in the composition of pollinator insects in natural habitats can trigger a rapid evolutionary transformation in plants." This is particularly interesting as some pollinator insects have been vastly affected by the extensive use of pesticides and the depletion of the landscape in recent decades. In the future, plants may increasingly rely on flies as pollinators, which would result in the evolution of weaker flower fragrances and more self-pollination. In the longer term, this would reduce a plant population's genetic variability and the plants would become more susceptible to disease.

"Whoop, Whoop" said the Bee

Honey bees make a number of different noises inside the colony. One signal was thought to be a stop signal, telling other bees to quit waggle dancing. New research shows that bees make a similar sound much more frequently and in no connection with a waggle dance or trophallaxis. Instead this "whoop, whoop" sound seems to be a brief buzz of surprise when two bees bump into each other in the dark.

It happens much more frequently at night, when foragers have called it a day and are in for the evening. The sound can also be elicited *en masse* through a gentle knocking on the hive. Read more about this signal at the New Scientist, which includes some great video footage. Or check out the open-access paper by Michael Ramsey and a team from Nottingham Trent University published in PLoS.

Young larvae and old larvae have different effects on the development of nurse honey bees



In eusocial insects, daughters rear the offspring of their queen to adulthood. In the honey bee, nurses rear both young and old larvae, which emit different pheromones. These larval pheromones affect nurse bee behaviour and physiology.

Young worker larvae, which need the protein-rich food produced by nurse bees, emit the pheromone e-beta ocimene (eβ) and stimulate more pollen foraging. Older larvae, destined to become workers, are fed a diet with four times as much sugar and half the protein. These more mature larvae emit predominantly non-volatile ethyl and methyl fatty acid esters, collectively known as brood ester pheromone (BEP), and much smaller amounts of eβ. Larval development is thus orchestrated by the interplay of larval signals and nurse feeding responses.

The brood environment may significantly reduce the age of first foraging.

- Exposure to eβ increases the proportion of pollen foragers and reduces age of first foraging.
- Caring for old larvae reduces vg mRNA and VG protein in attending nurse bees.

These results support the view that the reproductive regulatory network is sensitive to colony conditions and mediates the foraging division of labour.
http://www.sciencedirect.com/science/article/pii/S0003347216303621

Honey Bee origins

A new study led by Julie Cridland of the University of California with others from UC Berkeley clears some of the fog around honey bee origins. Previously, researchers had assumed an origin for honey bees in north-east Africa or the Middle East. But the situation turns out to be more complicated than that.

"You might think that bees that are geographically close are also genetically related, but we found a number of divergent lineages across north-east Africa and the Middle East".

There are two major lineages of honey bees in Europe - C, "Central European," including Italy and Austria and M, including Western European populations from Spain to Norway - which give rise to most of the honey bees used in apiculture worldwide. But although C and M lineage bees exist side by side in Europe and can easily hybridize, they are genetically distinct and arrived in different parts of the world at different times.

In the Middle East, the O lineage hails from Turkey and Jordan, and Y from Saudia Arabia and Yemen. The main African lineage is designated A.

At this point, the researchers cannot identify a single point of origin for honey bees. In some cases, diverged lineages that happen to be close to each other have mixed again.

Sexual Transmission of DWV

Varroa preferentially feed on drone larvae, giving them ample opportunity to infect drones with Deformed Wing Virus. An open access paper published in September 2016 in ***Scientific Reports*** demonstrated that these infected drones were capable of competing with healthy drones to mate successfully with virgin queens.

Queen development is very short (16 days compared to 24 for drones), so varroa mites tend not to enter queen cells. In this study the queen larvae and royal jelly in queen cells was free of DWV, while the newly emerged virgin queens were also free of DWV or had only low levels of the virus - presumably from being fed by nurse bees.

These queens were allowed to mate and captured on their return. If they returned with the mating sign from a drone still attached, the endophallus was removed and analyzed for DWV virus. Three of the 29 endophalli retrieved showed very high levels of DWV. In total, 7 of the 30 queens that were allowed to mate ended up with high levels of DWV throughout their tissues. In contrast, queens that mated with healthy drones free of DWV on a mating island, were virus free or had only low levels of DWV. The authors conclude that "infection of queens may arise during sexual contacts with drones, and given the extreme degree of polyandry found in queens, seems to be an obvious route for DWV transmission, both between colonies and across generations."

Quick Teatime Biscuits

(Makes about 24 biscuits, which keep well for several days)
3 eggs
4 – 5 oz wholemeal flour
½ tsp. mixed spice
2 dsp. honey
½ tsp. baking powder
Cream the eggs with the honey. Add the remaining ingredients and mix well. Spoon the mixture into small mounds on a baking sheet lined with greaseproof paper. Bake in a preheated oven for 10 – 13 minutes at 190 – 200°C/ 375 – 400°F/ Gas 5 – 6.

With thanks to Jackie McQueen

The Great British Bee Count

Friends of the Earth is running this from 19 May - 30 June and invites the public to download a free app to help identify the bees. Sightings will be mapped on www.greatbritishbeecount.co.uk and copied to the National Biodiversity Network where experts, researchers and local authorities can access the data. Do register and join in.

Bee Creative in the Garden is a new campaign launched by the Royal Horticultural Society in collaboration with the Wildlife Trusts to urge gardeners to do more to help protect bees. It culminates in "Wild About Gardens Week" 23-29 October. And there is a "'Bee Creative" photo competition.

Varroa - THE problem for our bees

A report of a talk to the West Sussex Beekeepers

IPM is of course the way to deal with Varroa. What Professor Steve Martin did with his talk was to give us the history and context for the current thinking. No-one is better at presenting a narrative than someone with actual experience. Steve was there at the NBU when Varroa arrived in the UK and in the intervening years has been associated with the idea that while Varroa may eventually take down a colony it is the viruses and particularly DWV, which are the real killers. Over the last quarter of a century, techniques have improved, becoming more and more sensitive while speed and set-up cost have gone up exponentially. Interestingly we have not found many new viruses since the pioneering work on honeybee viruses by Leslie Bailey and Brenda Ball at Rothamsted. Perhaps the defining moment for DWV and Varroa was Steve's work in Hawaii, tracking the migration of the mite from infected to uninfected islands and the subsequent changes in DW virus from a diverse number of strains to just one, strain A. Recent research has identified strains B and C.

Strain B appears to protect bees from strain A and was identified in Ron Hoskins's Swindon bees last year. So we come to the ReViVe project funded by BDI and BBKA associations *(and to which the I&ESBKA is contributing over 3 years)*. They have the first year's samples and they are being analysed. A good spread of treated and untreated colonies has been submitted from all over the country. The analysis is on-going and a mass of data is being generated. A parallel study by Salford University on samples from the USA shows a spread of A, B and C strains of DWV over there. The next question is what is the relationship between these strains? Does A tend towards B in a stable population of bee colonies, if colonies carrying the more virulent A are allowed to die out and what might be the role of hybrid A-B strains? Should we perhaps be culling colonies identified with Strain A? What happens if A is introduced to a B area and vice versa? The whole issue may also be related to bee movements. Can moving bees with the wrong strain upset years of careful husbandry in which non-virulent strains have evolved? We won't get rid of Varroa and eventually it will co-exist much as it does with Apis cerana, but we may be able to manage the viral load.

A virulent virus spreads rapidly through a population but every host colony it kills is an evolutionary dead end. The virus strains that eventually dominate will be those that do not kill their host colonies and so go on to replicate and spread to other colonies. The natural trend must therefore be towards less virulent forms within an area. Killing Varroa with chemical treatments and keeping colonies alive which would otherwise fail prevents this climax being reached and so perpetuates the virulent strains. In the end Steve Martin believes it is the bees and mites themselves who hold the answers. Stable relationships are evolving with numerous documented examples of untreated bees in various parts of the world, and countless undocumented feral and managed colonies round the country. The search is on. The answer may be to stop treating for Varroa and let nature run its course, but is it a brave or a foolhardy beekeeper who takes this step risking their bees in the process? A professional bee-farmer could not afford to do this and must treat prophylactically but an amateur beekeeper could take the time to identify which colonies do not need treating.

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 30 Apr	Weekly apiary training sessions at 2:00 pm every Sunday begin. Please book - it helps us to plan.	See link.
Sat 20 May	Mock Basic Assessment at Jeremy's, Dallinghoo IP13 0LA from 2:00. Please book	Ipswich & ES Jeremy Quinlan Contact
Wed 31 May & Thu 1 June	The Suffolk Show Please enter as many classes as you can. Schedule & entry forms	Helen Davies, Honey Show Secretary: Contact
Sun 2 July	Non beekeepers' afternoon from 2:00 pm. Essential to book. Protective clothing provided.	Ipswich & ES Richard Allen Contact
Sat 8 July	Apiary Safari: 10:30-4:00 Meet at Pavilion IP10 0PW Please book no later than 30 June.	Ipswich & ES Jeremy Quinlan Contact