



# BUZZWORD

*First prize, National Honey Show*

The Newsletter of the  
Norfolk Beekeepers' Association

April 2020

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### Next issue in May

#### Special Issue

All articles, events and things of interest to the beekeeping world should be sent to the Editor by **23<sup>rd</sup> April 2020** at:

[buzzwordnbka@gmail.com](mailto:buzzwordnbka@gmail.com)

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## Chairman's Buzzwords

Trevor Nash



Since our AGM a couple of weeks ago, the world as we know it has changed completely. One of the first jobs I had to do on being elected as Chairman was to effectively shut down all our activities such as talks and demonstrations.

Since then, events like the Spring Fling and now the Royal Norfolk Show have also been cancelled for this year.

Unfortunately, this will mean that we will not be able to meet together for the foreseeable future. We will of course keep you all updated with information and updates via emails, *Buzzword* and the NBKA website.

We will soon be entering the new beekeeping season, which, despite all of what is going on at present, will still carry on. There will be challenges to overcome and if anyone needs help and advice please contact us via email or phone and we will do our best to help and advise you.

I would like to thank Graham Wrenn for being our Chairman for the past three years. Graham and I have had a good working relationship during his time as Chairman. As I now take on this new role, I know both Graham, who will now take the role as Vice-chairman, and the rest of the committee will support me in the running of the association.

Hopefully, the current problems will eventually sort themselves out and we will once again be able to meet together and life will come back to some sort of normality.

In the meantime, I wish you all well. Keep safe and if I can be of help, please contact me on [chairnbka@gmail.com](mailto:chairnbka@gmail.com) or 07955 166852

Kind regards

Trevor

### Beekeeping in the time of COVID-19: Special Issue – call for questions

For the next few months, as we will not be able to meet, we will be publishing *Buzzword* more frequently to help members keep in touch with beekeeping activities in Norfolk during the coronavirus restrictions.

We are proposing a special issue for early May on aspects around beekeeping and COVID-19, with various articles including a Q&A section, addressing questions and worries submitted by members, as well as information and advice on emerging bee viruses, such as chronic bee paralysis virus.

We will also include advice on being extra stringent with swarm control during the coronavirus curbs.

Please send any questions you may have to the Editor (or any committee member) on [buzzwordnbka@gmail.com](mailto:buzzwordnbka@gmail.com).

# Winter inspections: thermal imaging

Regina Nickel, Seasonal Bee Inspector, Norfolk



As I walked out to the apiary on a crisp winter's morning the honey bee clusters were glowing in the dark. No, this is not a line from Carol Ann Duffy's latest poem, but one of my hive inspections using thermal imaging.

Why thermal imaging? Thermal imaging or thermography makes it possible to 'see' a honey bee colony without opening the hive by detecting its thermal radiation imprint on the hive surface. It is a useful (if slightly indulgent) tool for monitoring the relative strength of overwintering colonies and their position within the hive.

How does it work? In short, all matter above absolute zero ( $-273.15\text{ }^{\circ}\text{C}/-459.67\text{ }^{\circ}\text{F}$  – in case it comes up at a pub quiz) radiates thermal energy (i.e., heat). Thermal radiation is mostly emitted in the long-infrared (IR) range of the electromagnetic spectrum ( $9\text{--}14\text{ }\mu\text{m}$ ), which is invisible to human eyes. Thermographic cameras electronically detect the amount of IR radiation emitted by an object and the temperature variations are displayed in false colour in a thermogram.



**Fig. 1** Thermogram of two hives and my assistant Bonnie. The positions of the honey bee clusters within the hives are visible as magenta-coloured blobs

When taking thermal images in an uncontrolled setting (e.g., an outdoor apiary) with a handheld uncooled camera, various factors, such as weather conditions, camera angle and temperature can interfere with the accurate determination of an object's surface temperature. But relatively accurate thermal images of hives can be taken early in the morning on an overcast day. The camera should be cooled to the ambient temperature and held perpendicular to the face of the hive when capturing the image. Sunshine, wind and rain as well as glossy paints negatively affect the accuracy of a thermal hive image. A high ambient temperature and an efficiently insulated hive may be good for the bees but are bad for thermal imaging.

When analysing a thermogram of a hive it is important to bear in mind that it is an indirect representation of a honey bee colony – the camera detects the thermal energy transferred from the colony to the hive walls rather than the thermal radiation emitted directly from the cluster.

So, how is the heat from the honey bee cluster transferred to the hive surface? A honey bee colony has an impressive ability to lower its thermal conductance

by forming a tight spherical cluster, thus reducing the heat loss from the colony to the nest cavity<sup>1,2</sup>. However, at low ambient temperatures ( $<5\text{ }^{\circ}\text{C}/41\text{ }^{\circ}\text{F}$ ) the large temperature difference between the cluster and the interior of a (uninsulated) thin-walled wooden broodbox will increase the heat transfer from the cluster to the surrounding air, frames, broodbox walls and ceiling by means of convection, conduction and thermal radiation (see Figure 2 and ref.1). In turn, the air inside the broodbox will transfer heat to the outside by convection through the entrance and open mesh floor, and the walls and ceiling by conduction and thermal radiation, which can then be detected by a thermographic camera. The thermograms of National hives in Figure 3 clearly show the effects of that heat loss.

## What use is thermal imaging?

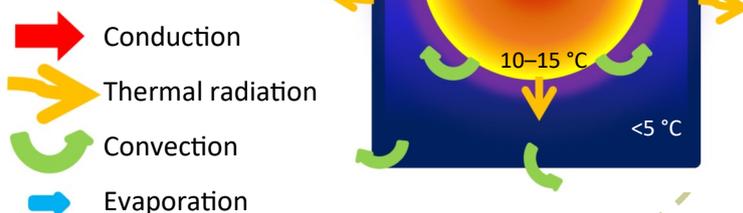
What meaningful information does thermal imaging provide about overwintering colonies? First of all, thermal imaging makes it possible to determine if a colony is dead or alive without having to open the hive. If no 'hot spots' can be detected on the hive surface, it is likely that the colony has perished or is about to. But by thermally examining the hives throughout winter, any deteriorating colony should be detected early enough so that an appropriate remedial action, e.g., the provision of fondant, is likely to prevent the loss of the colony.

By using thermal imaging, the development of overwintering colonies over time and their strength in comparison to other colonies in the apiary can be qualitatively assessed. Figure 3A and B show the expansion of a honey bee cluster in a 14x12 National hive over the course of a month. Because of the low ambient temperature this increase in cluster size is most likely a sign of continuous (successful) brood rearing rather than a mere dispersal of the cluster. A decrease in cluster size may be caused by a tightening of the cluster because of low temperatures (between  $14\text{ }^{\circ}\text{C}$  and  $-10\text{ }^{\circ}\text{C}$  the cluster volume shrinks about fivefold<sup>1</sup>) or by the deterioration of the colony.

In addition, thermal imaging makes it possible to monitor the position of a cluster within the hive. This is helpful in assessing if the colony has access to the stores/fondant and thus in preventing isolation starvation. Figure 3C shows the expansion of the cluster into the super. It is therefore likely that the colony is using the stores therein

*Continued on p3, opposite...*

**Fig. 2** Schematic illustration of the different ways a honey bee cluster (with a small brood nest) and broodbox (with open mesh floor) lose heat to the environment. Modified after ref.1



and is also able to access the fondant on top of the crown board. In the absence of mouseguards, thermal imaging can also be used to check for warm-blooded hive invaders.

My initial reason for splashing out on a thermographic camera was to optimise the oxalic acid treatment by determining a brood-free period during our increasingly mild winters. Alas, because of the caveats outlined above (i.e., indirect cluster detection, unknown emissivity, uncontrolled setting etc.), this turned out not to be as straightforward as I hoped.

Theoretically, it should be possible to detect the 15 °C or so temperature difference between a brood-free and brood-rearing colony, even with my entry-level camera (Seek Thermal Reveal). But this would involve some very tedious and laborious calibration measurements. I better concentrate on my 'remote hive sensor' project instead.

Nevertheless, it is one of the best gadgets I have bought in a while and, apart from thermal hive inspections, there are many other fun and useful applications for the camera, such as draught/bee-proofing the shed or taking psychedelic pictures of one's pet. It may also be useful for people in a supermarket queue, who wonder if the person next to them has a raised temperature...

## A refugee's story

Marwan Shaaban

After some positive responses from the article published in the February issue of *Buzzword*, Marwan will hopefully be able to continue his beekeeping just a 10-minute cycle ride from where he lives. His daughter, Israa, has translated his story about beekeeping in Aleppo, Syria.

"When I was 6 years old I used to go with my grandfather to his garden where there were olive and pistachio trees. I helped my grandfather water these trees.

One day I saw a swarm of bees on an olive tree branch. I called my grandfather to tell him. He ran and brought a large pottery jar and collected the swarm and told me to put the jar in the hive also made of pottery in those days. How scared I was but my grandfather helped me.

From then on he called me to help him with his bees. As time passed I learned how to treat bees and their ailments and how to remove honey from the hives. In those days he used to burn weeds and obtain honey by smoking the hives.

I kept this hobby all my life and later I had rectangular wooden hives. Later still we had square wooden hives with artificial wax plates with a greater yield of honey. Eventually I had 30 hives in an orchard of pistachio and olive trees and grape vines.

After the war started in Aleppo only 15 hives remained as I could not look after so many because of the shells and rockets striking the orchard.

How sad I was to be separated from my bees when we travelled to Turkey, about five years ago now."

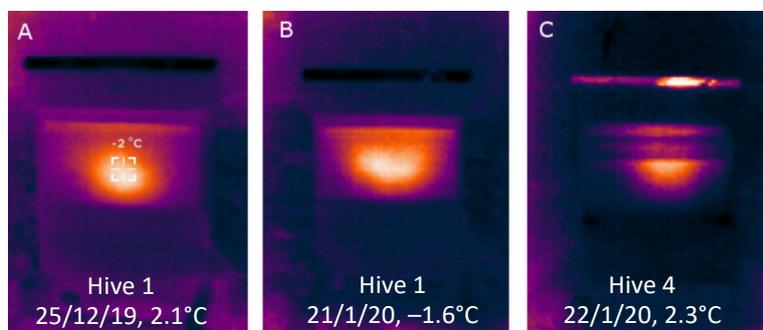


Fig. 3 Thermogram of (A) Hive 1 (14x12 plus super, warm way, open mesh floor) taken on 25/12/19 at 8:16; ambient temp. 2.1 °C; side view. [Note that the displayed temperature does not reflect the actual surface temperature of the hive. This is because of the painted hive surface has a lower emissivity than the pre-set camera value.]

(B) Hive 1 on 21/1/2020 at 8:39; ambient temp. -1.6 °C; side view, closed mesh floor.

(C) Hive 4 (1 ½ BS National, cold way, closed mesh floor) on 22/1/2020 at 7:28; ambient temp. 2.3 °C; front view

### Selected references:

1. Tomas D. Seeley (2019) *The Lives of Bees*. Princeton, NJ. Princeton University Press (pp. 223–233).
2. Edward E. Southwick and Gerhard Heldmaier (1987) Temperature Control in Honey Bee Colonies. *BioScience* 37(6), 395–399 (available at <https://bit.ly/3byjzZ>).

### Worried about your out-apiary?

The bees are livestock and as such beekeepers have a duty of care to them. We are also classed as 'keyworkers' inasmuch as we may be considered to be in the food production business.

Therefore we must, and can, visit the apiaries when necessary for the welfare of the bees and essential animal care. You do not want your bees swarming if you can possibly avoid it.

For more detailed information, please see the National Bee Unit's guidance on continuing good beekeeping practices, effective stock management and health checks while observing the Government's guidance on COVID-19: <https://bit.ly/340WADW>

### Bees in the News

#### Fossilised bee from 100 million years ago

The fossilised bee is the oldest record of a primitive bee with pollen and shares some traits with modern bees. <https://bit.ly/39sbaW2>

#### What if all the wasps disappeared?

This may help answer the age-old beekeeper's question: 'should I kill wasps?'. <https://bbc.in/3dApwXz>

#### Drowning bees surf to safety on waves they create

Bees get trapped on the water surface because water is much denser than air but they are able to flap their way to safety, researchers have found. <https://bit.ly/3ayaLms>

#### Beekeeping is on the rise in Britain

Strange for *Buzzword* to recommend an article from the *Express* (complaints on a postcard...) but this article, if accurate, may contain good news. <https://bit.ly/2WR5XEz>

# All I wanted to do was make some toast...

Jaime Blake

Jaime Blake, Head Gardener at Alan Bloom's garden, Bressingham, recounts here the inspiration that led him to keep bees and the familial support that will ring bells with many fellow beekeepers.

I started beekeeping ten years ago. By then I'd been working in the gardens at Bressingham for 20 years. I don't do everything in multiples of ten, and certainly not bees, although it can be a challenge to stop it.

Bressingham Hall (the house adjoining the garden) is 50% covered in ivy and used to be like walking past an electricity substation in September. Used to be. It had become a "Silent Spring". When I got my eye in (and actually paid attention) I realised there were no honey bees. I mentioned this casually at home and then was encouraged by my wife and daughter to take up keeping bees, my son was okay that it didn't interfere with the 'footy'. What could be the harm in beekeeping? You just put them in a box and collect the honey ... pimps!

As usual (for us all) there was the expense. Then trying to get your head around this being a real throw-back to the days when you could get each individual bit you needed to repair your toaster instead of throwing it out and getting a new one. I remember being bemused and confused when facing this 'toaster building' ... so you have a 'floor', that's okay ... but then you have different types of floor for different types of 'toaster' and then you have variation in whether you want the crumbs to fall out of the bottom or not ... and whether it's better to or not. And that's just the floor.

So I looked for help to find answers as to what toaster I should get, and found that this was another representation of the human condition ... there are no answers, or, actually, there are lots of answers but nothing absolute and certainly little agreement. And this was just for the blooming box that you were supposed to put the little blighters in!

## Local suppliers listing

Please bear in mind the advice of Public Health England for social distancing for everyone in the UK when buying or picking up supplies: <https://bit.ly/3bxBdfL>

**Applebee Apiary**, Rockland St Mary

John Everett, Master Beekeeper

Large range of beekeeping equipment from Thornes and other suppliers. We breed and sell honey bees. 01508 538231 [everettapplebee@hotmail.co.uk](mailto:everettapplebee@hotmail.co.uk) <http://applebeeorchard.co.uk/>

Closed Sundays

## Forthcoming Events

All future events are cancelled until further notice because of coronavirus. Please keep an eye on the NBKA website, on *Buzzword* or for emails from the Secretary for updates.

It turns out that no-one has ever been a bee, so can't give a definitive answer.

However, I did get over the hurdles. I now accept that I don't know what they are doing really, although I think they may be like us humans and 'make it up as they go along' at times. Of course, this doesn't stop me strategising and getting the odd success ... and it's quite nice, although often in retrospect, that we can't be masters of other natural organisms. Especially of those that we are making a big deal about trying to help, as is the case with me.

Now then, where do my family fit within this; you know, those who encouraged me at the beginning?

My wife reacts badly to bee stings, my daughter is only really interested in the adrenaline rush of an active swarm and my son can't understand the whole thing and watches through closed windows, whilst keeping a more serious eye on Sky sports.

So why am I still beekeeping? I don't really know. I'm not sure it's a lifestyle choice. However, I could no more give it up than I could give up growing my own tomatoes. I don't like honey but I love seeing the girls 'lazing' around on the alighting board on a warm summer's evening ... like people of the Mediterranean, chatting and taking it easy at the end of a long day. I like to think that even though the girls work so very hard, they can still 'enjoy' summertime when the living is easy.

### Bees wanted

Peter Kulpa is a new beekeeper looking to get started this year. He is looking to buy a nuc or colony and is based in Oulton, NR11. Any members who can assist, please contact Peter on 07921 221 450, [peterkulpa@cantab.net](mailto:peterkulpa@cantab.net).

### Stolen bees

A fellow beekeeper has had four hives stolen with bees and a homemade double hive stand from Old Buckenham allotments. Please be aware if you are offered any equipment or bees that they might have been stolen. Please keep an eye on your bees, where possible.

**Don Cooper**, Roughton NR11 8QP; 01263 761517

5/6-Frame BS nucs available in May from £150  
30lb Buckets of honey; advice on "all things bees"

**Glebelands Apiary**, Rocklands St Mary NR14 7BX

Peter Beckley, Thornes agent (reportedly the longest serving in the UK). 01508 480262; [orns@btconnect.com](mailto:orns@btconnect.com)

**Stephen Crowe**, Lingwood NR13 4BL, 01603 712101

Sell 1lb jars of local Norfolk honey, bees and nucs from £150 this spring. Also have 30lb buckets of honey for sale.