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BEETALK

Warwick and Leamington Branch of Warwickshire Beekeepers

HEATWAVES AND THE HONEY BEE

Image credit: Honey Bee Suite

As Britain warms and extreme weather becomes more frequent, beekeepers are increasingly asking a once unthinkable question: can a honey bee get too hot? The short answer is yes. Despite their remarkable ability to regulate hive temperature, *Apis mellifera* is not immune to the pressures of prolonged heatwaves. In fact, sustained high temperatures can disrupt every level of colony function — from individual physiology to brood development, foraging behaviour and longterm colony viability.

Honey bees maintain brood nest temperature within a narrow band of **34–36°C**, regardless of the weather outside. This stability is essential: even small deviations can impair larval development, reduce adult longevity, or cause deformities.

During a heatwave, however, the colony's thermoregulation system is pushed to its limits. Worker bees must fan vigorously, collect water for evaporative cooling, and cluster away from the brood to reduce internal heat load. These behaviours keep the colony alive — but they come at a cost.

One of the earliest signs of heat stress is **a decline in foraging activity**. At high ambient temperatures, bees face a double challenge: overheating during flight and rapid dehydration. To cope, they shorten foraging trips, reduce flight speed, and in extreme conditions, stop flying altogether.

This reduction in foraging coincides with another heat related problem: **Flowers produce less nectar during heatwaves**. Many UK forage plants — including bramble, clover, and lime — dramatically reduce nectar secretion above certain temperature thresholds. The

result is a nutritional bottleneck at precisely the moment colonies need more resources to fuel cooling efforts.

Heatwaves can have profound effects on developing brood. If hive temperature rises above 36 °C for extended periods, studies show that pupae may emerge with:

- malformed wings or legs
- reduced body mass
- impaired learning and navigation
- shortened adult lifespan

Even when brood survives, the stress can trigger 'precocious foraging' — young bees begin foraging earlier than normal, which shortens their lifespan and de-stabilises colony demographics.

Perhaps the most concerning impact of extreme heat is on **queen fertility**. Honey bee queens store sperm for their entire reproductive life, and stored sperm is highly sensitive to heat. Exposure to temperatures above 40 °C — which can occur in poorly ventilated hives or during transport — can kill a significant proportion of stored sperm cells.

A queen with compromised fertility may begin laying drones, fail prematurely, or trigger supersedure at a time when colonies are already stressed.

During heatwaves, a strong colony may collect **several litres of water per day**. Water carriers and fanning bees are diverted from nectar collection, brood care, and guard duties. This reallocation of labour weakens the colony's overall productivity and resilience.

Heatwaves rarely occur in isolation. They often coincide with:

- drought
- reduced floral abundance
- increased pesticide concentration in shrinking water sources
- wildfires or habitat desiccation

These factors compound heat stress and can lead to longterm declines in colony strength, overwintering success, and pollination capacity.

Not all honey bees respond to heat in the same way. Subspecies such as *A. m. jemenitica* and *A. m. scutellata* are naturally more heat tolerant, while European subspecies commonly kept in the UK — *ligustica, carnica*, and *mellifera* — are adapted to cooler climates. As heatwaves become more frequent, genetic resilience may become an increasingly important consideration for beekeepers.

What can beekeepers do?

Practical mitigation strategies include:

- providing **constant, reliable water sources**
- adding **upper ventilation** or propping open roofs
- shading hives during peak heat
- avoiding inspections during the hottest part of the day
- ensuring colonies are not overcrowded
- spacing supers to improve airflow

These measures don't eliminate heat stress, but they can significantly reduce its impact.

Honey bees have survived for millions of years, but the pace of modern climate change presents challenges unlike anything in their evolutionary history. Heatwaves are no longer rare anomalies — they are becoming a defining feature of the beekeeping calendar.

Understanding how high temperatures affect *Apis mellifera* is essential for safeguarding both our colonies and the vital pollination services they provide. As the climate continues to warm, the resilience of our bees will depend increasingly on informed, adaptive beekeeping and a landscape capable of supporting them through extremes.

Ivan A. Perry

NUC ACQUISITION PROTOCOL

The protocol for acquiring a nuc of bees from a fellow member is as follows:-

- Establish whether the donation is of the bees only or includes the nuc box.
- Always return any of the donor's kit, nuc boxes, entrance blocks or foam strips, nuc box straps, feeders etc, promptly, complete and in the condition it was loaned (or better).
- Unless indicated by the donor to the contrary, provide clean, preferably, new replacement frames for any you retain of the same type as those donated, fully and properly assembled with 11 nails fixed in their specified positions to retain the new foundation which should be of the of the same type (wired or unwired) as those donated fitted without any bowing.

WHO'S WHO ON THE BRANCH COMMITTEE

CHRIS COX – WARWICK AND LEAMINGTON BRANCH SECRETARY.

The question of what to do when I stepped down from managing the governance aspect of the electricity supply in the 90s was initially answered by becoming a Warwickshire young person's charity trustee, and after a few years its Chair. However, looking around the room of my fellow trustees after a period (none were young and all were retired) prompted several questions as grant giving bodies looked for more appropriate governing body representation. On reaching the grand age of 70 I decided that I should step down to make room for more appropriate and youthful leadership.

Now, what to do?

As luck would have it, I had gifted to my wife that Christmas an "Introduction to Beekeeping" course and although she hadn't taken up beekeeping it resulted in me receiving the exact same gift the following Christmas. So, the Cox household started beekeeping some 10 years ago. At that time training was led by Tim Foden at Dalehouse Lane and as I was about to find out much, much more of the branch activities centred on him also. As Tim's health rapidly deteriorated an appeal went out for help and having has some previous trustee and governance experience, I put my hand up and was interviewed by Tim. The role was mine!

Some 10 years later I am still following Tim's secretary model: his document styles; his electronic file storage protocols; his document headings and templates etc. etc. The maxim "if it ain't broke why fix it" being very much to the fore.

My own beekeeping has now moved from the enthusiastic but well-informed hobbyist to something slightly constrained by age.

The Warwick and Leamington branch operates within the structure of the registered charity (Warwickshire Beekeepers Association), with all 8 branches nominating two of their members to be trustees. Currently Bernard Brown and I are the trustees of the Warwickshire Beekeepers Association from Warwick and Leamington.

As with all small charities finding officers to take on the key rolls has proved difficult even as Warwickshire Beekeepers Association has some 900 members. Again, I have put my hand up to help and am currently serving the two-year term as Chair of Warwickshire Beekeepers Association.

Will I ever learn!?

HURST FARM UPDATE

A small and ill-behaved insect together with its mates conspired against the working party from making as much progress on the extraction unit as we had planned. Nevertheless, despite the demands of beekeeping, we managed to make a start on the electrical installation and completed the ramped floor to the porch which will enable all your multiple and heavy supers to be trol-leyed into the extraction unit without damaging your back. Next on the agenda is to complete the electrical installation, the plumbing, install vinyl skirting to seal the edges of the floor from over-zealous mopping, install the warming cabinet and finish off with a coat or two of paint. That's all!?!

We could still do with volunteers with plumbing and professional electrical skills so if that's you please contact Clive Joyce on 07792 222251.

BBKA TALKS

The next in the BBKA's monthly series of Zoom talks is: **'The Hive in July'** with Jack Silberrad, NBU Regional Bee Inspector, on Tuesday **16th June at 7pm**.

Zoom link **here**

Meeting ID: 812 3381 9992
Passcode: 527929

A recording of this talk will be available on the BBKA Member Hub afterwards for those unable to watch live.

DIARY DATES

Winter Talks - all at 7.30 pm at Kenilworth Senior Citizen Club, Abbey End, Kenilworth

17th September 2026 Margaret Murdin NDB: Honeybee nutrition - with a little on winter preparation

16th October 2026 Marin Anastasov NDB: Why bees don't follow the books

19th November 2026 Debbie Smith, Champion mead maker: Making and tasting mead

11th December 2026 The Best Christmas Party

Judith Masson
Meetings Secretary

YLH – THE LATEST BUZZ

DIY "confuser" entrance/exit aid

Since last month a further 6 sightings have been confirmed making 20 the total for 2026 thus far. This compares favourably with last years total of 24 in the same period. Whilst it is early days this is encouraging.

The monitoring undertaken by both Derbyshire BKA and our own YLHAT Co-ordinators have produced no further sightings. The YLH sighted has been taken for analysis but the nest from which it came has not been located. Being somewhere out there still is something of a concern and the local BKA are continuing monitoring.

Talking of monitoring, Solihull Branch held a YLH briefing session, focussing on monitoring at one of their Wednesday evening apiary sessions. The apiary itself is very impressive and worth a visit. I was made very welcome and, incidentally, we have been invited along on a Wednesday evening to see for ourselves. The display, put on by Solihull's YLH co-ordinator, was equally impressive as can be seen from the photos. Preceded by a talk by Colin White, the branch co-ordinator, updating the 15 or so attendees on the latest developments on the YLH situation, mercifully held under cover, the display itself , held outside, covered YLH identification, a selection of traps of varying effectiveness, various types of bait stations, and a range of the types of hive defences available. Trappit, the brand of preferred bait, was dispensed into phials for those signing up to establish monitoring stations to take away.

Not even the weather which treated us with a heavy shower of rain and rendered parts of the display a little soggy, detracted from what was a very good and informative event. The weather did, at least, preclude any beekeeping so the briefing session had attendee's undivided attention. The excellent tea and cake rounded off a very enjoyable evening.

Bernard Brown
WLBK YLAHAT Co-ordinator

SCIENTISTS CONFIRM THAT BEES CAN SWIM

When a bee crashes into water, it may still be able to swim to safety. New research from Michigan State University confirms that honeybees can propel themselves across the water's surface, and their movement is purposeful and directional. They swim toward darker areas - likely using visual cues to locate the shoreline and escape.

Scientists only recently discovered that honeybees can propel themselves across the surface of water, which is a surprising ability for an insect built for flight, not swimming.

The reason bees can move across water is surprisingly simple. The undersides of their wings quickly become wet and can no longer generate lift, but the flight motor keeps firing, creating a hydrofoil-like effect. That force generates waves behind the bee that propels it forward.

The study suggests this little-known behaviour may help bees survive encounters with water while foraging.

"We found that bees don't just move randomly when they're on water," said Zachary Huang, associate professor in the MSU Department of Entomology and co-author of the study. "They actually orient toward darker areas, which probably represent land, vegetation or the edge of a pool. That behaviour increases their chance of getting out."

To test this behaviour, researchers placed individual bees in a shallow bowl of water with a dark section along the edge. Most bees consistently moved toward the dark area rather than randomly around the bowl, showing a clear directional preference known as skototaxis, which is the tendency to move toward darker visual cues.

"Swimming toward those cues may help bees find a place to climb out and dry their wings so they can fly again," Huang said.

The researchers also tested whether exposure to thiamethoxam, a commonly used insecticide, affected bees' ability to navigate while on the water.

Bees exposed to the insecticide no longer showed a preference for dark areas. Instead, they moved randomly around the water surface and took longer routes to reach the edge.

Further analysis showed the exposed bees made significantly more turns while moving across the water, suggesting reduced motor control rather than a loss of visual orientation.

"These bees eventually reached the edge, but not toward the dark section and their movement was much less efficient," Huang said. "The results suggest insecticides may interfere with the motor coordination needed for this behavior."

The study also examined mason bees, a solitary bee species. Both male and female mason bees showed an even stronger preference for dark areas than honeybees, and female mason bees reached the edge faster and traveled shorter distances.

The findings suggest the ability to move across water and orient toward darker escape routes may have evolved before bees developed complex societies.

In the wild, bees encounter water more often than people might expect. Some collect water to help regulate hive temperature, while others may accidentally land on water while flying over lakes, ponds or irrigation systems.

The ability to propel themselves toward the shoreline could help these bees survive these encounters.

"Even though only a small fraction of workers collect water, the ability to escape when they fall in could still benefit the colony," Huang said.

The researchers say the work also highlights how pesticides can affect new bee behaviors that are not studied.

"Most pesticide research focuses on foraging or learning," Huang said. "But bees perform many behaviors in the real world that we don't often measure. This study shows that even something unusual like swimming can be disrupted."

Their study - *Bee swimming is adaptive but disrupted by insecticide* - has been published in the journal Communications Biology (2026) and can be found **here.**

TASTER DAY VOLUNTEERS

This year our Taster day will be at BBKA headquarters at Stoneleigh on **Sunday 6th September**. We currently have 10 people paid up and are hoping for some more delegates to appear from displays, shows and of course your recommendation to work colleagues and friends who have shown an interest in our craft. There will be a cap of 25 attendees for practicality.

We always need some help to run these days if they are to be the success they usually are. The tasks with which we need assistance are as follows:

- Someone to organise the washing of the bee suits after the event and to ensure that they are returned to their rightful owners promptly. We do not expect one person to wash all the suits but do need someone to co-ordinate this task.
- We will also need extra hands to assist with the apiary session in the afternoon as we plan to have one experienced beekeeper per 5 attendees. We are hoping to hold the apiary session at BBKA headquarters but are awaiting confirmation of this.
- If you feel like giving a talk to enthusiastic potential beekeepers, please let us know and we will find a session for you (basic presentations are available for your use). It is always good to find new presenters. It is a very enjoyable time with the delegates always ready to learn.

If you think you might be able to help with any of the above, please do get in touch with us.

Paul Day paul@paulday.co.uk
Jane Richmond Jane@J-Richmond.co.uk

HINTS AND TIPS

- On average rape honey will granulate within 10days of being sealed in the comb. So, watch out for when the yellow flowers fade and harvest it as soon as possible. As you extract your honey don't forget to think about the Honey Shows and save some of the good looking jars for entering. It's really useful to get expert opinion on your produce. The Honey Show has a class for wax candles so keep the wax cappings separate, as they are the best for making the candles and wax blocks.

- Between the dandelion and blossom crops of spring and the big tree flowers and brambles in July, and bees may even need feeding. However, this should not be of concern to you if your bees are visiting domestic gardens, as there is a wealth of forage to be had.

- Monitor for signs of robbing from weaker colonies and, if necessary, re-introduce the entrance block.

If you have any hints or tips that you would like to share, please send them to h.essex211@gmail.com
Helen Essex

The editor of Bee Talk is Tanya Weaver.
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