

GWENYNWYR CYMRU

Hydref 2026



WELSH BEEKEEPER

Autumn 2026



Issue 233

WBKA

Hydref 2026

Published by
Cymdeithas Gwenynwyr
Cymru
Welsh Beekeepers'
Association



Registered Charity
509929

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Submissions:

All magazine submissions should reach the editor on or before the last day of January, April, July and October.

Magazine layout design:
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Printed by:

WPG Ltd, Severn Farm
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Cover photograph by Anna Jans

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Editorial

Autumn 2026

Welcome to the autumn edition of the Welsh Beekeeper. You will be aware that Trustees have been undertaking a Strategic Review of the role of the WBKA in supporting the future of beekeeping in Wales. The result, reported by WBKA Chair, Selwyn Runnett, is a comprehensive vision statement and framework of policies and programmes that we need to consider and develop. One such issue is the importation of honey bees with all the attendant risks. Council have agreed a new policy that is outlined in this edition.

Paul Pearce gives an update on current risks from invasive species and highlights the potential threats from *Tropilaelaps* and small hive beetle. Honey Bee Health: Challenges and Solutions is the theme for the WBKA Spring Convention, March 27th, 2027. Reserve the date.

Congratulations to all those who

competed in the Welsh National Honey Show. The winners include a number of young beekeepers who entered a wide range of classes.

Our main articles consider: the potential role of hive configuration in winter colony losses; a fascinating insight into the ways in which honey bees exploit forage resources to meet the complex and fluctuating demands of an active colony; and an outline of best practice study skills for aspiring students of beekeeping.

The WBKA is an organisation run entirely by volunteers and there are always roles, great and small, for the 'truly willing'. Please contact secretary@wbka.com for more information or discussion.

Please note that entries for the photo competition are due by 31st October, as are articles, letters and news items for the magazine.

NORTHERN BEE BOOKS VISIT northernbeebooks.co.uk

BEEKEEPING IN HARMONY WITH NATURE: The Evolutionary Solution to the Varroa Problem by Bartłomiej Maleta (Translated by Stephen Martin)

"A very important publication and relevant to every beekeeper whether or not they intend to pursue treatment-free beekeeping. One of the best books that I have read lately."

— Ann Chilcott (Scottish Expert Beemaster)

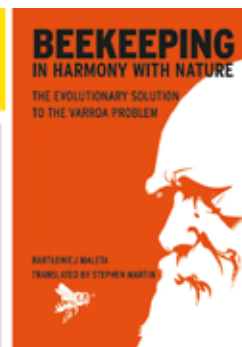
Northern Bee Books (1st Eng. transl. 2025) 394pp £55

THE AMERICAN AZ HIVE by Debra Langley-Boyer

Discover the American AZ Hive, a cabinet-style hive that lets you care for your bees from inside a sheltered bee house. In this practical guide, Debra shares the history of the AZ hive, offers real-world advice, and includes clear hive diagrams. Start working your bees from the comfort of a beehouse!

Northern Bee Books (1st ed. 2025) 178pp £25

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News Items

WBKA Council Meeting: The WBKA Council met on 27th June. Key issues on the agenda were: the Strategic Review, Honeybee imports, the cost of producing the WBKA's various popular booklets, a proposal for the UK National Honey Show to have a dedicated Welsh Section, an update on the Yellow-legged hornet, a report from the Regional Bee Inspector, together with brief discussions on winter losses and hive side training.

WBKA Strategic Review: The extensive consultation carried out by the Trustees has resulted in a new document Beekeeping for the Future, which sets a framework for the future activities of the WBKA together with a new Vision Statement for the WBKA. The document and the Vision Statement were agreed by the Council at its June meeting. A full analysis of the document and why it is important is covered in an article in this edition of the magazine. Thank you to all the Associations who got involved and contributed. It will help steer beekeeping here in Wales in the period ahead, which we know will have many challenges.

A Revised Policy for Honeybee Imports: The Council also agreed a revised policy on honeybee imports, which is also covered in an article in this edition of the magazine.

Honeybee Health Issues: The complex issues around honeybee health have been highlighted by concerns about some high losses during the winter of 2025 - 26. This has been raised by several Associations and was also raised at the June Council Meeting. A variety of views have been expressed about the incidence of, and reasons for, losses but we lack firm evidence to explain what has been happening, and why.

One of the problems is that, in the UK, we do not have access to a facility similar to the US Department of Agriculture – Agricultural Research Service, Bee Research Laboratory, in Beltsville, Maryland. For those not familiar with it, the Beltsville Lab runs a Bee Disease Diagnosis Service. Samples of adult bees and beeswax comb are examined for bacterial, fungal and microsporidian diseases as well as for two species of parasitic mites and other pests, although the Lab does not analyse for the presence of viruses or pesticide residue. There is no charge for this service, which is available to all US

beekeepers. Ironically, the US Government announced proposals in April to close the Beltsville Lab. A question asked at the June Council Meeting was: Can beekeepers in Wales have access to something similar to Beltsville in the future?

As we know, bee health issues can emanate from three principal sources: pathogens and pests, toxicity (including environmental pollutants), and genetics. We also know that the issues involved are complex. As a result, the Trustees have agreed to create a new Bee Health, Genetics, and Conservation Sub-Committee. This will examine the issues and promote honeybee health. Selwyn Runnett, WBKA Chair commented: "The aim will be to provide a beekeeper-led analysis and evaluation of scientific research with practical application to beekeeping management practice. We will provide appropriate technical advice to beekeepers in addition to identifying gaps in research. The Sub-Committee will also coordinate the WBKA's input to the current joint Welsh Government/DEFRA Healthy Bees Plan 2030, <https://tinyurl.com/5n7c7dj4>, and to its successor, which may see the development of a stand-alone all-Wales Bee Health Plan (similar to the Scottish Honeybee Health Strategy)." If you are interested in getting involved with the new Sub-Committee, please get in touch by email to: chair@wbka.com.

Beekeeper Education and Training: During the Consultation Meetings for the Strategic Review, almost all Associations identified education and training as a key priority. The overwhelming view was that this was the single most important issue where the WBKA could provide support to Associations. Strong reservations were also expressed about any commercial involvement with education and training which might undermine the role of local Associations. Many Associations have strong links with the local communities in which they work and operate and so, in effect, we have a network of community beekeeping associations. This is a valuable resource which needs to be supported and strengthened.

As part of this, we are undertaking a comprehensive review of how the WBKA can improve and strengthen its education and training work, led by Vice-Chair, Paul Pearce. This will produce a number of new initiatives to help and support Associations. The first element to be delivered is training for Basic Assessment Supporters. The course will familiarise experienced beekeepers with how

the Basic Assessment is delivered and assessed. This will allow Supporters to:

- Ensure Association Members are aware of the syllabus for the Basic Assessment and are fully prepared to take the Assessment, and
- Become Assessors to improve the coverage of WBKA Basic Assessors across the country.

The training will be delivered in two parts. The first is a theory-based day that will take place over the autumn and winter. During this session, we will familiarise everyone with the Basic Assessment, paying particular attention to the areas that often cause problems. The venues are Pwll-glas, Ruthin, and Merthyr Tydfil. The second part of the training will be a live assessment next year (venues to be determined).

New Senedd Committees: The Senedd now has a new Committee structure. The Committees are made up of Members of the Senedd from different Party Groups who work together to undertake detailed work, including holding Government Ministers to account. They gather evidence and hear from the public and experts. In relation to beekeeping (and pollinators), the relevant Committee is the Climate Change, Environment, Sustainability, and Rural Affairs Committee. Its remit relates to “climate, nature, environment, sustainability, and rural affairs.” It has a membership of nine MSs and is chaired by James Evans MS (Reform UK - Brycheiniog Tawe Nedd).

The Committee is currently seeking views on its priorities and the WBKA will be making a submission. If you have any views, please let us know: chair@wbka.com. This Committee will be important in helping us to put forward the positive case for beekeeping and to show how it can contribute to sustainability, conservation, biodiversity, and healthy ecosystems. <https://tinyurl.com/s966dsa8>.

Chronic Bee Paralysis Virus (CBPV): We have received anecdotal evidence of an increase in CBPV, and also problems with nosema. In relation to CBPV, it is understood that the Bee Farmers' Association is undertaking a survey of its membership with a view to better understanding its impact and then lobbying for more research into CBPV, which can only be a good thing. Further information on CBPV can be found on BeeBase, <https://tinyurl.com/3anznt4c>.

The Case for Beekeeping: As many of you will know, there is a small but growing lobby which is either sceptical of the merits of beekeeping or even wants to see it banned. They see honey bees as a non-indigenous species which compete with other pollinators for foraging resources, leading to a loss of biodiversity. This was highlighted in April 2025 when Neath Port Talbot Council banned managed honeybee colonies on its land “to prevent damage to local biodiversity.”

We are currently putting together a policy and practice document in support of beekeeping, which we plan to publish in the Autumn. However, additional support for beekeeping has come from a new article by Prof. Jacques van Alphen, published by SICAMM (the international organisation for the protection and conservation of the European Dark Honeybee), which examines the complex relationship between honey bees and other pollinating insects <https://tinyurl.com/nhab462c>.

This follows on from the Apimondia Statement on the Interactions Between Pollinators (published in March 2026) which examined whether managed honeybee colonies are a potential cause of declines in wild pollinator populations. It concluded that whilst localised competition for resources and risks of pathogen transmission can occur, especially under high colony densities or limited floral resources, there is no consistent large-scale evidence that managed honey bees are a primary driver of wild pollinator loss. Beekeeping should be recognized as part of the solution. When well managed, it supports biodiversity, strengthens ecosystems, and contributes to sustainable agriculture and livelihoods, <https://tinyurl.com/y9ws6rs7>.

SICAMM 2027 Conference in Ireland: SICAMM and the Native Irish Honey Bee Society have confirmed that the 2027 SICAMM Conference will be hosted in Ireland by NIHBS. The Programme will feature the latest scientific developments and conservation initiatives, and will provide an important opportunity to share knowledge, strengthen international collaboration and continue the work of conserving locally adapted populations of *Apis mellifera mellifera*. This is important for us in Wales because of our Voluntary Conservation Area (VCA) for the indigenous Welsh Dark Bee of the Llŷn Peninsula and Eifionydd, <https://tinyurl.com/mwde8mus>.

A letter from David Wainwright

I read with interest Victoria Davies' article about our bees' mysterious water collecting activities in the Spring 2026 edition of your most interesting magazine. I agree with Victoria that the water gathering bees sometimes need the water alone, and sometimes need the substances dissolved, for many purposes, related to the needs of the colony at any particular point in time.

A few years ago, I was involved in an interesting case related to one of these substances dissolved in the water that bees were collecting. We imported a container of honey from North West Zambia which was sampled by Port Health at Felixstowe. When the results came back, they detected the antibiotic streptomycin in the honey, and the authorities were not happy. They suspected that the beekeepers were treating bees with streptomycin to prevent bee diseases. I explained that there were no bee diseases in the forest of North West Zambia so the bees must be finding this streptomycin from natural sources. Port Health told me that if I wished to bring in another container I would have to prove that the streptomycin was from natural sources. I only had a few months to sort this out before the next container arrived at Felixstowe.

I recruited Nicola Bradbear from Bees for Development and Peter Martin, the honey scientist. The Welsh Government, Wales for Africa team provided funding. Peter and I set off for Kabompo where we joined forces with Bob Malichi, MD of North Western Bee Products and Ngila Wunonge, Secretary of the NWP Beekeeping Association, my long-time collaborators down there. Our theory was that the bees were searching out water containing streptomycin and bringing it back to their hives to self-medicate their colonies. This behaviour has been observed in leaf cutter ants and other social insects. It could also be part of the explanation of the healthy state of the Zambian bee colonies, none of the beekeepers we met had ever come across a sick bee colony. We wanted to take samples of water where bees were foraging and take these samples back to UK for analysis. If we could show that bees were gathering water containing streptomycin, then this would be a natural ingredient of honey and Port Health would not have an issue with it.

We decided that we should focus our sampling on areas far away in the forest, the back of beyond, where we liked to hang out, far from the madding crowd. Kabompo itself

is a remote place, 225 miles from the nearest tarmac road, we then bumped along another 150 miles of sandy tracks to the Dongwe river and the village of our friend, Captain Nune. As his guests he looked after us in all aspects: providing accommodation, excellent suppers of bush meat, and plenty of fresh honey beer for consumption around the camp fire in the evenings as we discussed microbiology and other subjects.

The day after we arrived at Dongwe, Captain Nune called a meeting of all the 40 or 50 beekeepers. We explained our mission and asked questions about where they saw bees gathering water. The collective opinion was that bees preferred 'dirty' water. They would often be seen gathering water from crooks in trees where water collected, rather than along the river bank where pure water flowed. They showed us these little crooks where a branch joined the trunk, and we took samples from these. There were more to be found across the river, so Peter and I got into a dugout canoe with one of the beekeepers and he paddled us across the crocodile infested river. Unfortunately, half way across we saw a kingfisher and turned too quickly, unsettled the canoe and we all ended up in the water. As Peter was our guest, we heaved him back in safely and then the two of us had to swim back across the river pushing the canoe and hoping that the crocodiles hadn't noticed.

Back in the UK we analysed the samples, streptomycin was detected as we had hoped. We put forward a case that an exception should be made allowing Zambian honey a higher level of natural streptomycin and this was accepted by the responsible authorities. Port Health were happy and closed their books on the issue.

My view now after observing bees gathering water in many locations, is that the bee colony has the need for many substances, for innumerable purposes. These needs are constantly changing throughout the season. The substances are often to be found dissolved in water from different sources. Somehow, the bees know what they need and search out and keep returning to the sources. They thrive on a broad and varied diet, just as we do. In other situations, they need water in bulk for cooling their hives and other purposes, so where water is scarce, such as on the chalk downlands of Salisbury Plain, we provide water troughs with hundreds of litres of water which the bees work their way through until they refill with rainwater over the winter.

Events

October 22nd - 24th

UK National Honey Show,
Sandown Park, Esher, Surrey

November 7th

WBKA Council Meeting (virtual)

March 6th

WBKA AGM & Council Meeting
(provisional date)

March 20th

WBKA Convention

Snippets from Apimondia

International Congress of Beekeepers

Honey bees prefer syrup contaminated with viruses:

Researchers at the USDA-ARS Honey Bee Breeding Genetics and Physiology Laboratory and Louisiana University set up a trial, giving honey bees a choice between pure syrup and syrup contaminated with Black Queen Virus, Chronic Bee Paralysis Virus and Deformed Wing Virus. Bees have been shown to identify foods contaminated by pesticides and to avoid them. However, the trial showed that nurse bees, while avoiding the contaminated syrup in summer, preferentially fed on contaminated syrup in the autumn. Forager bees consistently preferred syrup with DWV. The Scientists do not have an explanation for this potentially harmful behaviour. The research was published in Biology Letters, and a summary can be found at <https://phys.org/news/2026-04-bees-viruses-food-sources-dont.html>

Colony losses in the USA:

Beekeepers reported colony losses of 55.1% from April 2023 to 2024, 55.6% from April 2024 to 2025 but a drop to 39.9% from April 2025 to 2026.

Army to Apiary:

Army veterans often find it difficult to move from a military routine to civilian life. Beekeeping has been shown to help them manage this more easily. In the US, an organisation called Hives for Heroes

facilitates this, whilst Ukraine has a similar model called Help on Bee Wings.

Honey labelling:

EU Directive 2024/1438 (also known as The Breakfast Directive as it covers jams, marmalades, fruit juices, dehydrated milk as well as honey) has come into force. All countries of origin must be listed on the honey container labels, in descending order according to the percentage from each country.

Yellow-legged hornet found in Austria:

Two primary nests of this invasive insect have been found in Austria near to the Swiss border, the first found in this country. Both were located in a storage container. One nest contained live insects and was destroyed. The discovery demonstrates the unstoppable spread of the YLH across Europe.

Conserving the Canarian dark bee:

Beekeepers in Lanzarote have received Black Canarian queen honey bees from a neighbouring Canary Island, La Palma, in an effort to conserve the pure bred native subspecies. The Canarian dark bees are known for their exceptional resilience, having survived the intense heat and gases produced during volcanic eruptions on the islands. Lanzarote has 12 beekeepers managing about 300 colonies.

Invasive species : it is not getting any easier

Paul Pearce

The threats from invasive insect species.

I am writing in early August so much may have changed by the time this goes to print and you read it. What follows is an update on where we are with the three most pressing invasive species; Yellow-legged hornet (YLH), *Tropilaelaps* (Trop) and Small Hive Beetle (SHB). I am acutely aware that two of the three are beekeeper specific and one is a wider environmental problem and there are other invasive species too, Himalayan Balsam for example; each are equally damaging and deserving of attention; but we can't eat the whole elephant.

YLH Current Status

As of Friday 7th August, the number of YLH reported was 99 with 26 nests having been identified. All reports have been in England where the BBKA are undertaking much monitoring work previously undertaken by the NBU.

YLH Successes

It is sad to observe that YLH has been in Europe for over 20 years and no sustainable containment or eradication plan appears to have worked. North America too has YLH and seems to be struggling to contain their spread. New Zealand now has YLH but a glimmer of hope for them is that all vespid wasps are invasive in New Zealand giving greater opportunity to use less selective trapping. There has been no golden bullet from pharmaceutical companies; the media, including the BBC and the BBKA Magazine have carried reports of conventional selective trapping failing to contain YLH spread. All told, given the resources and extensive work put into tracing and eradication, the results are disappointing.

YLH Way Forward

Is a YLH invasion inevitable? If we do not do something different, yes. There are growing voices suggesting we need to significantly rethink our approach. One is Andrew Durham, a beekeeper and author who has been

a part of our Webinar programme and is probably one of the UK's most pragmatic YLH specialists. The impact of YLH spreads well beyond beekeeping so we could argue it is not our lead; however, someone must start the pan-environmental specialist conversation and no one else is standing up.

Excepting some golden bullet pharmaceutical solution, we need to start a conversation about another way forward. And it is likely to be an uncomfortable conversation. We need to discuss what it would take to truly control (and / or eradicate YLH). It will involve talking to all environmentalists and many, understandably, will want to protect their specialist part. However, we need to all understand that there may be a need for some collateral damage to protect the wider good of the environment. Better that overall diversity survives. Essentially, this means accepting that a successful YLH trapping programme designed to minimize any bycatch may harm small numbers of non-target species including honey bees. I'm against killing anything unintentionally, but I see the logic of sacrificing a twig to save a tree. And it probably goes without saying, we need a United Kingdom approach. The YLH does not respect borders.

Funding and resources are major hurdles and are limited in these challenging times. Especially in Wales where we have relatively few beekeepers and our population density is low. The WBKA has significant concerns about a sustainable solution. It would be too easy to fire up a small army of members to voluntarily help with YLH control only to find that volunteer fatigue and dwindling resources limit or stop activities. Beekeepers alone cannot fight YLH. Even with the support of the NBU and other agencies this needs a coordinated effort across all stakeholders.

The WBKA is looking to start a conversation through the Welsh Pollinator Task Force, but it will require high level support if we are to succeed.

Tropilaelaps and small hive beetle (Aethina tumida)

Tropilaelaps and small hive beetle (SHB) are receiving less column space in this article but that does not reflect any lack of significance.

Both are likely to have as much, if not more, impact than an invasion of YLH.

Tropilaelaps

Tropilaelaps is not in the UK but is approaching Europe from the east and is currently known to be in Georgia (by Black Sea). Maggie Gill (PHERA Science) and her team are doing excellent work on *Tropilaelaps*. Maggie's YouTube and WBKA videos are better than anything I can write here. The WBKA is sponsoring a Master Beekeeper and educator to join Maggie in Georgia so we will have good information to share on this significant pest.

Currently, our only defence is the NBU checks of imported bee stock.

Small Hive Beetle

SHB is known to be in Italy and can be transported on plant stock. BeeBase has much detailed information on this pest from sub-Saharan Africa and is your best reference point. There are clear identification images and reporting information.

Currently, our only defence is the NBU checks of imported bee stock and the APHA checks on imported plants.

What Can I Do?

Speak to your association YLH coordinator if you need YLH information; watch Maggie Gill's videos about *Tropilaelaps*; and take a look at the information about the YLH, *Tropilaelaps* and small hive beetle on BeeBase. Then be diligent and carefully observe what is happening around and inside your beehives. And finally, report anything suspicious.

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Beekeeping tasks for October to December

Jill Hill provides a quick guide to essential tasks and sources of further information.

Task	Rationale	Links to useful information
Stop hive inspections but visit the apiary regularly to ensure hives are intact	The cluster should not be disturbed. There is little that can be done if the colony is not queen-right in winter	
Remove any varroa treatments used at the end of summer	Leaving treatments in the hive can lead to varroa resistance	NBU Best Practice Guidelines for <i>Varroa</i> https://tinyurl.com/fr7rpbm
All feeding with syrup should be completed by the end of October	If the bees are unable to remove excess water from syrup, it can ferment causing dysentery in the bees	Feeding Bees by Wally Shaw https://tinyurl.com/bde2b3s5
Remove queen excluders if you are over-wintering on double brood or brood and a half	The queen needs to be able to move with the cluster through the whole of the hive as it accesses stored honey	The Apiary in October in "The Beekeeping Year" by Lynfa Davies https://tinyurl.com/dk4mht2c "Preparing bees for winter" by Wally Shaw WBKA webinar. August 2020 https://tinyurl.com/4v3bejh6
Fit mouse guards over the hive entrance	Mice consume honey and pollen and can cause considerable damage to combs. They also contaminate the interior with urine. The colony is unable to defend itself when in a cluster	The Apiary in October in "The Beekeeping Year" by Lynfa Davies https://tinyurl.com/dk4mht2c
If green woodpeckers are a nuisance, cover the hive with chicken wire to stop them	Green woodpeckers can peck holes in hive walls to consume the bees inside	The Apiary in October in "The Beekeeping Year" by Lynfa Davies https://tinyurl.com/dk4mht2c
Put a strap around the hive in preparation for winter storms. Ensure hives are in good condition and waterproof	Prevent hive parts being separated during strong winds and support the colony to keep warm and dry	
Apply oxalic acid by sublimation or trickle method during broodless period in late December	All <i>Varroa</i> mites will be on the bees if there is no brood so <i>Varroa</i> treatment will be very effective	" <i>Varroa</i> Management" by Kirsty Stainton The Apiary in December in "The Beekeeping Year" by Lynfa Davies https://tinyurl.com/dk4mht2c

Task	Rationale	Links to useful information
Heft hives as winter progresses to assess the amount of stores	If the hive feels light, the bees may have consumed most of their stores and will starve before spring. Place fondant (not syrup) over feed holes in the crown board if needed.	Feeding Bees by Wally Shaw https://tinyurl.com/bde2b3s5
Render wax when the weather is cold and the bees are not flying	Wax is a valuable commodity and can be exchanged for sheets of foundation at the WBKA Spring Convention	“Wax and frame recycling” by Wally and Jenny Shaw. WBKA webinar. October 2020 https://tinyurl.com/mt65v5sc
Treat stored drawn frames with acetic acid	This prevents wax moth damage and kills chalkbrood and nosema spores	“Varroa management” by Kirsty Stainton NBU Advisory Leaflet: Common Pests and Diseases https://tinyurl.com/5hnc484t
Review your beekeeping records and reflect on what went well and what did not	Learn from your mistakes and improve your beekeeping	The Apiary in November in “The Beekeeping Year” by Lynfa Davies https://tinyurl.com/dk4mht2c



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Beekeeping for the future

Selwyn Runnett – WBKA Chair

Planning a strategy to support beekeepers.

This article is about the WBKA's Strategic Review. This could well be the cue for your eyes to glaze over and to skip to the next, more interesting, article about practical beekeeping. But wait and ask yourself: What will practical beekeeping look like in three years' time, or in five years' time? Well, it will be more or less the same, won't it? Well, no – it almost certainly won't be the same. Major changes are coming, which none of us can avoid or ignore.

Facing the Future

Some of you may remember the quote from Donald Rumsfeld in 2002 (the US Secretary for Defence during the Iraq War): "...there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns - the ones we don't know we don't know." Many people laughed at him at the time.

The objective is to predict the future and best prepare to meet the challenges.

The point, of course, was that we face a challenge in understanding what the future might have in store for us because we often have limited knowledge of the factors that will affect our future. Some people and organisations give up on thinking about the future, either because they find it too difficult, or view it as an irrelevant waste of time – the future will look after itself, etc. The problem is that the future becomes the present – sometimes quite quickly. The lesson is that what we do, or don't do, in the present, will affect how the future turns out. The challenge for many organisations is that if they don't prepare for the future, they may not have one. Of course, none of us can

know what events may happen which are outside of our control, but we can deal with the "things that we know". So, what do we know?

Some of the Challenges We Face as Beekeepers

These are the main key issues we looked at as part of the Review:

Honeybee Health Issues and Genetics

- The Yellow-legged hornet (YLH) has arrived and, unfortunately, it is almost certain that it will become established. What we don't know is when this will happen. What we can say is that it will change the way we do our beekeeping.
- *Tropilaelaps* and Small Hive Beetle: both of these pests are a significant threat. However, we will need to prepare. Again, if they do arrive, it will change beekeeping.
- The struggle to deal with *Varroa* continues and there are now two schools of thought on how to deal with it: continue with a miticide approach or look towards a genetic adaptation approach (particularly here in Wales). There is a danger that these contrasting methodologies will cause division amongst beekeepers.
- There appear to be increasing problems with the incidence of viruses and Nosema.
- There is a growing emphasis amongst policy makers on the importance of addressing nature recovery, biodiversity and healthy ecosystems.
- The use of pesticides and environmental pollution continue to be major concerns that have a significant impact on beekeeping.
- The case for Locally Adapted Bees (LAB) and for genetic stability in local honeybee populations is likely to become more important as the effects of genetic instability become more apparent.
- We will depend much more on good quality scientific and applied research to both analyse and solve our problems.

Making the Case for Beekeeping

- Yes, some people think beekeeping is not a good thing! The argument is that managed honeybee colonies can adversely affect biodiversity.
- Is the period of “save the bee” and beekeepers being seen as conservationists coming to an end?
- What are the objections? Who is raising the objections and why?
- How can we address those objections?

Beekeeping Associations

- Since the late 19th Century beekeeping associations have been the foundation stones of the craft at a county and community level. They help to build relationships: between bees and beekeepers, between beekeepers (so creating beekeeping communities and beekeeping friendships), and between beekeepers and local communities.
- However, they face challenges: ‘YouTube’ beekeepers, critics within the craft, participation (volunteers, mutuality) v. digital beekeeping.
- There is a growing problem affecting voluntary organisations: all volunteer organisations face growing difficulty in recruiting, retaining, and sustaining enough volunteers to carry out tasks.
- Current cost-of-living pressures reduce the financial and time capacity of potential volunteers and new beekeepers alike.
- The ageing demographic of current beekeepers presents a succession challenge that requires active recruitment of young beekeepers (and changes to the way we engage with different age groups).
- How do we defend and develop our unique network of community beekeeping associations? Should we develop regional partnerships and ‘Partnership Apiaries’?

Education and Training

- This is the top issue for most beekeeping associations.
- The challenges include skills and mentoring, the need for information and reliable resources, “training the trainers”, training apiary management - and support for Apiary Managers, online resources.
- Developing young beekeepers.

Some of the Challenges Facing the WBKA – The Need for a Review

Since it was set up in 1943, the WBKA has been the representative body for beekeeping in Wales and is a Registered Charity. Its main role has been to support the activities of its Member Associations. However, its role has always been to represent all beekeepers in Wales – regardless of changing methods of beekeeping management practice - whether they are amateur or commercial, or their motivation for being involved in beekeeping.

As most of you will know, the WBKA is run entirely by volunteers. It achieves a lot and with very limited financial resources. However, the current Trustees acknowledge that it needs to do more in the future, if we are all to address the challenges we face as beekeepers. They realised that a Strategic Review of its policies and activities would be necessary to identify and meet those challenges. This has involved a comprehensive consultation with the WBKA’s members.

In addition, since the creation of the National Assembly/ Senedd and the Welsh Government, the role of the WBKA has become steadily more important, given that pollinator, environmental, and agricultural policy are now devolved matters and are therefore the responsibility of the Senedd and the Welsh Government. So, part of the response to the challenges we face is to engage with the Senedd, the Welsh Government, and Welsh civil society to a far greater extent and at a higher level in the next twenty years than has been the case over the last twenty years. In addition, the WBKA needs to recognise and address changes in beekeeping, beekeeping associations, and in the wider society within which beekeeping takes place and in which beekeeping associations operate.

Thinking – Then Doing

The Review that we have undertaken as Trustees has not been about providing detailed answers to all the challenges we have identified together during the consultation meetings. Good strategy development is not about producing a document to sit on a shelf gathering dust. It’s primarily about thinking through the issues we face and that we know about, as well as taking intelligent guesses about the things we don’t know about (going back to Donald Rumsfeld). This thinking process

should lead to a clear view about why the WBKA exists, and what it exists to do and for whom. It then needs to provide a 'roadmap' for the detailed work that needs to be done to produce policies and programmes that will make a real practical difference to beekeepers, the welfare of honeybees, and to supporting nature recovery, biodiversity and healthy ecosystems. As a starting point we have produced a Vision Statement and a list of key policies and programmes we will be developing and then implementing – in partnership with our Member Associations. These were approved by the WBKA Council at its June meeting.

Want to get involved? We are always looking for new volunteers. Please get in touch with the WBKA Secretary or Chair if you would like to chat with us about how you might be able to help. Everyone has a potential contribution to make - you don't have to be a Master Beekeeper!

Vision Statement

Our Vision is to be the National Voice for Beekeeping in Wales. We will do this by:

- Promoting the craft and science of beekeeping for all beekeepers and the development and activities of local beekeeping associations
- Equipping every beekeeper to develop their beekeeping through education and training programmes and the provision of information and guidance together with relevant scientific and technical knowledge
- Promoting beekeeping which puts respect for, and the welfare of, honeybees at the centre of beekeeping management practice
- Developing genetic stability of local bee populations through the promotion of genetically locally adapted honeybees
- Developing and promoting a sustainable framework for beekeeping
- Protecting and conserving the indigenous Welsh Dark Honey Bee (*Apis mellifera mellifera*) which forms part of the natural heritage of Wales
- Promoting conservation beekeeping and Voluntary Conservation Areas for indigenous honeybees
- Supporting biodiversity and the stability of local eco-systems.

Key Issues – Future Policies and Programmes

- Developing and promoting the 'Case for Beekeeping'
- Developing an enhanced Education and Training Programme
- Initiatives to help BKAs to sustain and develop their role
- Bee Health, Genetics, and Conservation/Invasive Species
- Developing an inclusive Framework for Encouraging Sustainability in Beekeeping
- Conservation Beekeeping
- Commercial Beekeeping
- Public Policy, Promotion, and Media (including Webinars and Events)
- Developing and supporting Young Beekeepers
- A detailed Development Plan for the future of the WBKA, including a 'Digital WBKA'

To become involved as a volunteer or for further discussion, email: chair@wbka.com.



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Revising our policy on honey bee imports

Selwyn Runnett – WBKA Chair

Ban honey bee imports - it's a "no-brainer" isn't it?

Come on, just ban honeybee imports. No 'if's', no 'buts', just do it. That's been my view for most of the time I've been beekeeping. And there are, of course, many good reasons for taking this view. See, for example, the 15 reasons set out by BIBBA in its Statement on Imports (www.bibba.com/imports/). I was a Trustee of BIBBA in 2021 when this Statement was drawn up, so not only do I support it, I also helped to draft it.

What are the key issues and discussion points?

During our recent consultation process related to the Strategic Review, a ban on imports was mentioned frequently. So, really, why don't we just do it? What is stopping us? Well, quite a lot, actually. The issue is complex and there are no straightforward answers. Why? Well, there are several major factors to consider:

- Why do we want to ban imports? Is it to prevent the spread of pests and diseases? Or is it to achieve genetic stability of local bee populations through locally adapted bees? Or perhaps both?
- What effects will a ban have on UK beekeeping?
- Is the import issue a demand problem or a supply problem? Or both?
- What are the political issues?
- Can we legally ban imports? And if not, why not?
- What does a sensible and workable policy look like?

Why do we want an import ban?

I am not going to rehearse all the arguments for an import ban. These have been set out in detail many times. What I would point out, however, is that we all need to be clear about our motivation and rationale for wanting to see a ban and how a ban would be implemented and enforced.

The Disease Control Argument

One of the key arguments is that importing bees carries the risk of introducing pests and diseases into the UK's honey bee populations (and potentially to other pollinators). This risk is increasing in relation to *Tropilaelaps* and the small hive beetle (*Aethina tumida*). And, of course, this is how *Varroa* arrived in the UK. There is also some evidence to suggest that viruses can be introduced through imported bees, although this is disputed.

The 'disease control' argument is the one primarily supported by the BBKA in England and is a strong argument. Imported bees will almost certainly introduce novel pathogens into a population that has no prior exposure and therefore no resistance. This is the classic disease-naïve population problem.

The counterargument made by many commercial beekeepers is that it is almost impossible to control imports, because of the potential for illegal imports by 'bad actors'. We know that the whole issue of illegal importation of animal and plant products is significant (sometimes involving organised crime). For example, the general issue has been highlighted by the UK Parliament's Environment, Food, and Rural Affairs Select Committee. The answer to this is to have controlled, legal, and regulated import routes, with rigorous health checks and certification. The argument is that this will be more effective in preventing disease transference than an outright and total ban (which will be unenforceable).

The Genetic Stability Argument

An alternative argument put forward for a ban is that imports produce genetic instability in local bee populations. It is the argument used by organisations such as BIBBA and is a policy position of the WBKA. This

instability is produced when different subspecies intermix and so introgression (the long term incorporation of foreign genes into the gene pool) occurs. This is because the importation of honey bee stock disrupts genetically determined environmental adaptation through a process known as outbreeding depression. However, the breeding of bees from different subspecies can also be done domestically within the UK and, in this context, imports will make no difference.

Imports have a long history (For an example, see the Book Review, page 17, Editor). Victorian and Edwardian beekeepers were enthusiastic importers, attracted, in particular by the reputation of the Italian bee for gentleness and productivity. This matters for several reasons:

- Genetic vulnerability: crossbreeding between imported and native stocks can produce hybrid bees with reduced fitness and disease resistance. *Apis mellifera mellifera* has evolved over millennia to cope with the British climate and its particular pathogen load.
- Pathogen introduction: imported bees almost certainly bring novel pathogens with them into local populations.
- Colony stress: hybrid colonies may be less well adapted to British Winters, leaving them nutritionally depleted and immunologically compromised by spring, which is exactly when pathogens hit hardest.

Market and Commercial Considerations

The key arguments for a continuation of imports are made principally by commercial beekeepers. Many of them will contend that imports are currently necessary for both the honey production industry in the UK and to meet high levels of demand from amateur beekeepers for queens (and the production of readily available nucs). The demand for bees (queens) cannot be met from domestic UK sources currently. So, an outright ban would effectively mean that the UK honey production industry could collapse, and there would be a huge shortage of bees for amateur beekeepers and their beekeeping associations. They want to see legitimate imports subject to notification, health certification and checks in line with the relevant legal requirements.

The arguments made by commercial beekeepers need to be considered carefully. Many of those calling for an immediate outright ban have not been able to explain how the gap between the demand for bees and the current UK supply can be bridged. There have been a lot of campaigns to promote queen rearing and to increase domestic production of queens, but none have had a sufficient impact on the supply deficit.

Political and Legal Considerations

The main problems relating to an import ban are political and legal. These issues have often not been considered adequately by those calling for an outright ban.

When the UK was a Member of the EU, it was bound by the rules and obligations of the EU's Single Market. This made it illegal to ban imports of bees from other EU Member States, without a derogation from Single Market Rules (no such derogation has been granted apart from the special circumstances of Slovenia). So, the importation of queens and package bees could not be banned. However, Brexit provided an opportunity to implement a ban, and, in fact, the UK did introduce a post-Brexit ban on the importation of package bees.

The UK could also move further and ban all imports. However, there has been one major problem in going down this path - the Windsor Framework. This provides that Northern Ireland continues to be a part of the EU Single Market whilst also being part of the United Kingdom (and its single market). So, anyone can quite legally and legitimately bring bees from anywhere in the EU into Northern Ireland (as part of the EU Single Market) and then move those bees from Northern Ireland into Wales, England, or Scotland. So, it is impossible legally to ban imports of bees.

In addition, the UK is seeking to negotiate a new SPS Agreement as part of a "UK-EU Reset" with implementation targeted for 2027. The Agreement is explicitly founded on the principle of dynamic alignment, meaning the UK would follow EU Rules rather than negotiate equivalence deal-by-deal. The Common Understanding states that the EU and the UK will work towards an SPS Agreement so that "the vast majority of movements of animals, animal products, plants, and plant products between Great Britain and the EU can be

undertaken without certificates or controls”.

If the UK dynamically aligns with EU SPS Rules, the situation relating to imports would revert to the EU Single Market position. This would mean:

- The current GB ban on importing packages of bees from the EU, which goes further than EU Rules, could potentially be challenged or unwound under dynamic alignment, unless a specific exemption is negotiated. It would also mean the prospect of a complete UK ban on queen bee imports from the EU would face the same Single Market obstacles that existed pre-Brexit. So, an import ban would be all but impossible.
- However, it is important to note that the entry of bees from outside the EU will be regulated to prevent the introduction of two exotic pests — the small hive beetle (*Aethina tumida*), and the *Tropilaelaps* mite.

The WBKA Council has agreed a new policy.

A Practical and Workable Policy that Provides a Way Forward

The reality we face is that a ban on imports is almost certainly unachievable in the short to medium term. However, the political environment may change either in the UK or in the EU. There are very strong arguments for a ban. However, in the short to medium term the political and legal obstacles to achieving such a ban are formidable. Those advocating for a ban have been unable to explain how they would remove those obstacles. It would, therefore, be a much better policy currently to insist on rigorously enforced legal routes for imports and campaign for the UK Government and the Devolved Governments to put in place sufficient resources for effective health checks and inspections to take place. There is some evidence to suggest that the current system of checks is under-resourced. There should also be rigorous action taken to prevent illegal imports.

The Current WBKA Position

The WBKA has two long-standing policies relevant to the importation of honey bees into Wales (and the UK):

- It strongly discourages the importation of queen bees and colonies of bees from outside the UK.
- It encourages all beekeepers to source locally adapted bees and/or make their own increase (as described in the WBKA booklet *A Simple Guide to Making Increase*).

The Revised Policy approved by the WBKA Council in June 2026:

- Instead of simply discouraging imports, the WBKA will aim for an outright ban on imports when the political and legal obstacles can be overcome. This would be achieved by using a phased approach (which will allow the supply of domestically produced locally adapted bees to develop and increase in a sustainable way).
- The WBKA should encourage domestic production of Welsh locally adapted bees by developing a Locally Adapted Bees Programme with BKAs, and encouraging the further development of Wales-based commercial beekeepers who are producing locally adapted bees, queens and nucs using an *Apis mellifera mellifera* phenotype. This will begin to tackle the supply deficit.
- Lobby for an improved system of controls on the legal import of bees (queens and attendants only – no package bees).
- Lobby for sufficient staff and financial resources to be made available for the effective implementation of import controls.

The new Policy means that the WBKA has committed itself to an outright ban on imports but recognizes that this is simply unachievable within current political and legal constraints. Instead, the WBKA will focus (at least in the short to medium term) on lobbying for improved enforcement of import controls (including inspections and other related health checks). It is particularly important that illegal imports are stopped. This revised WBKA Policy is a practical and workable way forward and may well provide a better defence against the risk of pests and diseases being introduced from outside the UK.

Honey Parsnip and Coconut Cake

Ingredients

175 ml sunflower oil plus extra for greasing
 3 large eggs
 100 g light muscovado sugar
 75 g clear honey plus 2 tbsp for the icing
 280 g self raising flour
 ½ tsp baking powder
 ½ tsp bicarbonate of soda
 200 g grated parsnips
 75 g desiccated coconut
 3 tbsp coconut flakes
 300 g cream cheese

Method

Heat oven to 180°C/160°C fan/gas 4.
 Lightly grease a 22 cm round loose-bottomed cake tin and line with baking parchment.

Put the eggs, oil, sugar and honey in a bowl and whisk for 3 - 4 minutes until thick and creamy.

Sift the flour, baking powder and bicarbonate of soda over the mixture and fold in carefully, along with the parsnips and desiccated coconut.

Spoon into the tin and bake for 45 minutes until golden and firm to the touch.

Push a skewer into the centre of the cake – if it comes out clean, then it is cooked. If it is still wet, cook for a further 10 minutes. Leave to cool before icing.

Put the coconut flakes on a baking tray and put in the oven for about 5 minutes until lightly toasted.

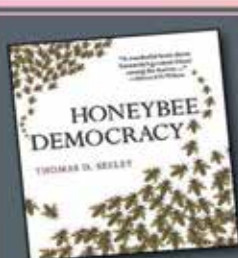
Keep an eye on them, as they burn quickly.

To make the icing, put the cream cheese and 2 tbsp honey in a bowl and beat together until smooth and creamy. Spread the icing over the top of the cooled cake and finish with the toasted coconut flakes.



C. Arden – Bookseller

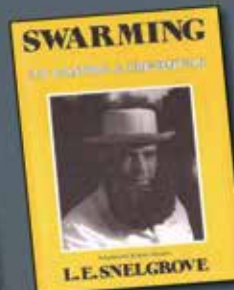
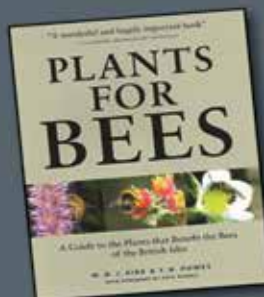
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The Apiary, or Bees, Bee-hives and Bee Culture

Alfred Neighbour (1866)

Beekeeping at the dawn of the moveable frame hive.

George Neighbour & Sons were the Victorian equivalent of Thornes, selling all things to do with beekeeping from shops in the fashionable West End of London at a time when beekeeping was undergoing huge change. Removable frame hives had only just been introduced, and it was still common practice to destroy colonies in their skeps to recover the honey.

Alfred writes with great enthusiasm in this guide to modern beekeeping and includes poems and quotations from literature whenever he can. I enjoyed the archaic language and smiled at his snobbery: "The social importance of beekeeping, as a source of pecuniary profit for small farmers and agricultural labourers, has never been appreciated as it deserves. Yet these persons will not, of themselves, lay aside the bungling and wasteful plan of destroying the bees, or learn without being taught the only proper method, that of deprivation. Their educated neighbours, when once interested in beekeeping, will be the persons to introduce the more profitable system of humane beekeeping."

I can imagine the new vicar turning up at a farm door to tell a farmer he has been doing it all wrong. On the other hand, much of the information and advice, such as that on swarm prevention by manipulating frames of brood in these new fangled hives is still in use today. I learnt a few things not often mentioned in modern books:

"Second swarms, known amongst cottage beekeepers as 'casts,' usually issue from the hive nine or ten days after the first has departed. It is not always that a second

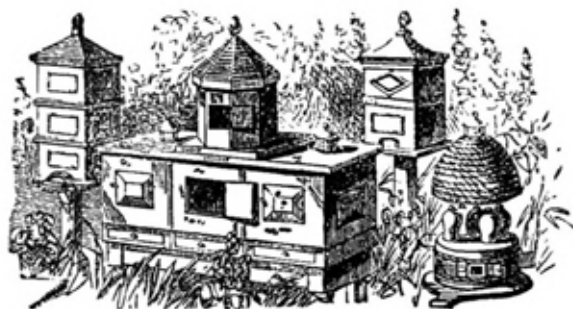
swarm issues, so much depends on the strength of the stock, the weather, and other causes; but should the bees determine to throw out another, the first hatched queen in the stock-hive is prevented by her subjects from destroying the other royal princesses, as she would do if

left to her own devices. The consequence is that, like some people who cannot have their own way, she is highly indignant; and, when thwarted in her purpose, utters, in quick succession, shrill, angry sounds, much resembling "peep, peep", commonly called 'piping,' but which more courtly apiarians have styled the *vox regalis*. This royal wailing continues during the evening and is sometimes so loud as to be distinctly audible many yards from the hive. When this is

the case, a swarm may be expected either on the next day, or at latest within three days."

Tim Hamill (LLEBKA)

NEIGHBOUR'S IMPROVED BEE-HIVES, FOR TAKING HONEY WITHOUT THE DESTRUCTION OF THE BEES.



The Apiary, or Bees, Bee-hives and Bee Culture
Alfred Neighbour, 1866
Available free: <https://tinyurl.com/5fujvx48>

Can Your Bees Recognise You?

The answer is, apparently, yes. A research Paper published in The Journal of Experimental Biology shows that honeybees can discriminate between, and recognise, images of human faces. Smile, please!
<https://tinyurl.com/8pku429t>

Results from the Welsh National Honey Show 2026

HONEY - MÊL

- 1 COMMERCIAL HONEY - Twelve glass containers of Honey of two or more glass sizes
1 Llewelyn Jones, Shane, Powys 2 Parry, Wayne, Caerphilly
- 2 COMMERCIAL CLASS - Twelve x 454g jars of one of the following: light, medium, dark, natural granulated
1 Edwards, Carys, Gwynedd 2 Llewelyn Jones, Shane, Powys 3 Davies, Martin, Carmarthenshire 4 Parry, Wayne, Caerphilly
- 3 COMMERCIAL HONEY - Twelve identical glass jars of one type of honey
1 Llewelyn Jones, Shane, Powys 2 Davies, Martin, Carmarthenshire
- 4 Six matching 454g jars of any type honey (runny, soft set or heather).
1 Luckhurst, Gary, Kent 2 Davies, Martin, Carmarthenshire 3 Edwards, Carys, Gwynedd
- 5 Two 454g jars of light honey.
1 Luckhurst, Gary, Kent 2 Rumsey, Lydia, Powys
- 3 Llewelyn Jones, Shane, Powys 4 Parry, Wayne, Caerphilly



Setting up the Honey Show

- 6 Two 454g jars of medium honey. 1 Rumsey, Lydia, Powys 2 Luckhurst, Gary, Kent 3 Wheeler, Graham, Flintshire 4 Thau, Awen, Gwynedd 5 Evans, Marian, Anglesey
- 7 Two 454g jars of dark honey (excluding heather)
1 Luckhurst, Gary, Kent 2 Llewelyn Jones, Shane, Powys
- 3 Wheeler, Graham, Flintshire
- 8 Two 454g jars of natural granulated honey 2 Llewelyn Jones, Shane, Powys 3 Luckhurst, Gary, Kent

- 9 Two 454g jars of soft set honey 1 Wheeler, Graham, Flintshire
- 10 Two 454g jars of heather honey 1 Llewelyn Jones, Shane, Powys 2 Rumsey, Lydia, Powys
- 11 Two 454g jars of heather blended honey
- 12 One 454g jar of liquid honey displayed in a jar which will be covered prior to judging 1 Luckhurst, Gary, Kent
- 2 Jones, Janet, Gwynedd 3 Noble Hook, Elyssa, Bridgend
- 4 Evans, Marian, Anglesey
- 13 One 454g jar of any honey in its natural form
1 Wheeler, Graham, Flintshire 2 Noble Hook, Elyssa, Bridgend 3 Squires, Karen, Carmarthenshire

COMB HONEY - MÊL DIL

- 14 Two 454g jars of chunk honey
1 Llewelyn Jones, Shane, Powys
- 15 Two standard containers of liquid cut comb honey (minimum 227g). 1 Luckhurst, Gary, Kent 2 Llewelyn Jones, Shane, Powys
- 16 Two standard containers of granulated cut comb honey (minimum 227g) 3 Luckhurst, Gary, Kent
- 17 Two sections of comb honey round/square.
1 Llewelyn Jones, Shane, Powys
- 18 One comb of honey, suitable for extracting, exhibited in a plain case. 1 Llewelyn Jones, Shane, Powys
- 2 Luckhurst, Gary, Kent 3 Davies, Martin, Carmarthenshire

BEESWAX - CŴYR GWENYN

- 19 One cake of beeswax, plain mould. To be 250-350g in weight 1 Luckhurst, Gary, Kent
- 20 Three matching candles other than moulded.
1 Wheeler, Graham, Flintshire 2 Luckhurst, Gary, Kent
- 21 Three matching moulded candles.
1 Wheeler, Graham, Flintshire 2 Griffiths, Geraint, Ceredigion 3 Luckhurst, Gary, Kent
- 22 A decorated beeswax exhibit to occupy a space not larger than 450mm x 450mm 1 Squires, Karen, Carmarthenshire 2 Davies, Martin, Carmarthenshire
- 23 Six x 28g (approximately) moulded blocks of beeswax.
1 Luckhurst, Gary, Kent 2 Davies, Martin, Carmarthenshire 3 Wheeler, Graham, Flintshire

24 A tin of hard furniture polish (hazard labels to be used). 1 Wheeler, Graham, Flintshire 2 Luckhurst, Gary, Kent 3 Llewelyn Jones, Shane, Powys

25 One container of furniture cream (hazard labels to be used). 3 Edwards, Carys, Gwynedd

COMPOSITE CLASSES - DOSBARTHIAU CYMYSG

26 Individual Composite Class 1 Llewelyn Jones, Shane, Powys 2 Luckhurst, Gary, Kent

27 Association Composite Class

1 Brecknock & Radnor BKA, Powys

MEAD AND HONEY DRINKS - MEDD A DIODYDD MÊL

28 One bottle of mead, sweet. 1 Luckhurst, Gary, Kent 2 Edwards, Carys, Gwynedd 3 Wheeler, Graham, Flintshire

29 One bottle of mead, dry. 1 Davies, Martin, Carmarthenshire 2 Tanner, Julian, Powys 3 Wheeler, Graham, Flintshire

30 One bottle of melomel, hyppocras (fruit spices to be named), cyser or pyment 1 Edwards, Carys, Gwynedd 2 Squires, Karen, Carmarthenshire

31 One bottle of metheglin or sack metheglin (type to be labelled) 1

Edwards, Carys, Gwynedd 3 Squires, Karen, Carmarthenshire

32 A non-alcoholic honey drink - recipe to be provided by the competitor 1 Vater, Caleb, Monmouthshire

2 Tanner, Diane, Powys 3 Vater, Verity, Monmouthshire

33 One bottle of honey vinegar, flavoured or plain

2 Luckhurst, Gary, Kent 3 Noble Hook, Elyssa, Bridgend

34 One bottle of honey beer 1 Tanner, Julian, Powys

GENERAL DISPLAYS - ARDDANGOSFEYDD CYFFREDINOL

35 A display of hive products suitable for a show window

2 Edwards, Carys, Gwynedd

EDUCATIONAL - ADDYSGOL

36 Photography - a photograph of beekeeper's equipment

1 Rawbone, Jason, Powys 2 Thau, Awen, Gwynedd

3 Vater, Verity, Monmouthshire

37 A drawing/painting of a beehive(s)

1 Tonge, George, Powys 2 Thau, Awen, Gwynedd 3 Vater, Verity, Monmouthshire

38 A beekeeper's item from bygone days (not to include old wax), 1 Thau, Awen, Gwynedd

HONEY CONFECTIONERY - MELYS FWYDYDD MÊL

39 A Honey cake 1 Llewelyn Jones, Shane, Powys

2 Griffiths, Geraint, Ceredigion 3 Tanner, Diane, Powys

40 Bara Brith

1 White, Tracy, Powys 2 Edwards, Carys, Gwynedd 3

Llewelyn Jones, Shane, Powys

41 Five Honey Welsh Cakes

1 Anderson, Josephine, West Yorkshire 2 Vater, Caleb,

Monmouthshire 3 Jones, Delyth, Gwynedd

42 A box of honey fudge (max size 8"/200mm)

1 Middleton, Gwen, Powys 2 Edwards, Carys, Gwynedd

3 Tanner, Diane, Powys

HONEY PRESERVES - CYFFAITH MÊL

43 One jar of honey preserves

1 Edwards, Carys, Gwynedd 2 Anderson, Josephine, West

Yorkshire 3 Vater, Caleb, Monmouthshire

44 One jar of honey marmalade

1 Edwards, Carys, Gwynedd 2 Vater, Caleb,

Monmouthshire 3 Llewelyn Jones, Shane, Powys

45 One jar of honey chutney

1 Bradley, Christine, Swansea 2 Anderson, Josephine, West Yorkshire

3 Vater, Caleb, Monmouthshire

NOVICE CLASSES - DOSBARTHIAU DECHREUWYR

46 Two 454g jars of honey which can be either light, medium, dark or granulated honey.

1 Jones, Janet, Gwynedd 2 Thau, Awen, Gwynedd 3 Parry, Wayne, Caerphilly

47 Five x 28g (Approx) moulded blocks of beeswax

1 Griffiths, Geraint, Ceredigion 3 Thau, Awen, Gwynedd

48 A comb of Honey suitable for extracting

1 Parry, Wayne, Caerphilly

YOUNG BEEKEEPERS CLASSES - DOSBARTHIAU GWENYNWYR IFANC UNDER 16 YEARS

49 Two 254g jars of honey which can be either light, medium, dark or granulated

1 Thau, Awen, Gwynedd

50 A miniature beekeepers apiary

1 Ap Bryn, Gwynfor Elis, Gwynedd 2 Thau, Awen, Gwynedd

51 A drawing/painting of a beehive(s)

1 Ap Bryn, Gwynfor Elis, Gwynedd 2 Thau, Awen, Gwynedd

52 Three decorated shortbread biscuits 'Bee' theme

1 Ap Bryn, Gwynfor Elis, Gwynedd 2 Thau, Awen, Gwynedd

OPEN GIFT CLASSES - DOSBARTHADAU RHODD AGORED

53 One jar of light honey

1 Llewelyn Jones, Shane, Powys 2 Luckhurst, Gary, Kent

54 One jar of medium honey

1 Llewelyn Jones, Shane, Powys 2 Luckhurst, Gary, Kent

55 One jar of dark honey 1 Luckhurst, Gary, Kent

56 One jar of natural granulated honey

2 Luckhurst, Gary, Kent 3 Llewelyn Jones, Shane, Powys

57 One jar of soft set honey 1 Llewelyn Jones, Shane, Powys

58 One container of cut comb honey

1 Luckhurst, Gary, Kent 2 Llewelyn Jones, Shane, Powys

CLOSED CLASSES - DOSBARTHADAU CYFYNGEDIG HONEY - MÊL

59 Two 454g jars of light honey 1 Noble Hook, Elyssa, Bridgend 2 Rumsey, Lydia, Powys 3 Davies, Martin, Carmarthenshire

60 Two 454g jars of medium honey

1 Evans, Marian, Anglesey 2 Davies, Martin, Carmarthenshire 3 Luckhurst, Gary, Kent

61 Two 454g jars of dark honey (excluding heather)

1 Wheeler, Graham, Flintshire 2 Llewelyn Jones, Shane, Powys 3 Luckhurst, Gary, Kent

62 Two 454g jars of natural granulated honey

1 Bradley, Christine, Swansea 2 Llewelyn Jones, Shane, Powys 3 Wheeler, Graham, Flintshire

63 Two 454g jars of soft set honey 1 Griffiths, Geraint, Ceredigion 2 Wheeler, Graham, Flintshire

64 Two 454g jars of heather honey 1 Llewelyn Jones, Shane, Powys

65 Two 454g jars of heather blended honey

66 Two 454g jars of chunk honey

1 Rawbone, Jason, Powys 2 Llewelyn Jones, Shane, Powys

COMB HONEY - MÊL DIL

67 One comb of honey, suitable for extracting, exhibited in a plain case. 1 Llewelyn Jones, Shane, Powys

2 Luckhurst, Gary, Kent 3 Rawbone, Jason, Powys

68 Two sections of comb honey round/square

1 Llewelyn Jones, Shane, Powys 2 Luckhurst, Gary, Kent

69 Two standard containers of liquid cut comb honey (minimum 227g) 1 Luckhurst, Gary, Kent 2 Llewelyn Jones, Shane, Powys

BEESWAX - CŴYR GWENYN

70 Six x 28g (approximately) moulded blocks of beeswax.

1 Luckhurst, Gary, Kent 2 Noble Hook, Elyssa, Bridgend 3 Thau, Awen, Gwynedd

71 A pair of candles (1 to be lit by the judge only)

1 Luckhurst, Gary, Kent 2 Davies, Martin, Carmarthenshire 3 Wheeler, Graham, Flintshire

72 One cake of beeswax (plain mould 250 - 350g in weight) 1 Luckhurst, Gary, Kent 2 Wheeler, Graham, Flintshire 3 Thau, Awen, Gwynedd

MEAD/HONEY DRINKS - MEDD & DIODYDD MÊL

73 One bottle of mead, sweet. 1 Luckhurst, Gary, Kent 2 Bradley, Christine, Swansea 3 Wheeler, Graham, Flintshire

74 One bottle of mead, dry. 1 Edwards, Carys, Gwynedd 2 Wheeler, Graham, Flintshire 3 Davies, Martin, Carmarthenshire

75 One bottle of melomel, hyppocras (fruit spices to be named), cyser or pyment 1 Davies, Martin, Carmarthenshire 2 Edwards, Carys, Gwynedd 3 Squires, Karen, Carmarthenshire

76 One bottle of metheglin or sack metheglin (type to be labelled) 1 Bradley, Christine, Swansea 2 Edwards, Carys, Gwynedd 3 Davies, Martin, Carmarthenshire

SPECIAL PRIZES / GWOBRAU ARBENNIG

SP1 The Crawshay Challenge Trophy - Class 1: Shane Llewelyn Jones

SP2 The Ceri and Jean Davies Cup Class 2: Carys Edwards

SP3 The E J Tanner Perpetual Memorial Trophy **: Brecon & Radnor BKA

SP4 The Sir Evan Williams Trophy **: Brecon & Radnor BKA

SP5 The WBKA Challenge Trophy ** Classes 59 - 76:

Gary Luckhurst

SP6 The Charles H Davies Challenge Trophy **. Awarded to the exhibitor gaining the highest number of points in the Classes 39 – 42 (Confectionery):

Shane Llewelyn Jones

SP7 The George Faraday Davies Cup ** Awarded to the exhibitor gaining the highest number of points in Classes 49 - 52 (Young Beekeepers): Awen Thau

SP8 The Warren Davies Perpetual Trophy ** Awarded to the exhibitor gaining the highest number of points in Classes 73 – 76 (Mead & Honey Drinks):

Tim Doyle

SP9 The H J Evans Perpetual Trophy **, Kindly donated by the late Mr H J Evans, Drug Stores, Machynlleth, The E H Thorne (Beehives) Ltd. Award: £20.00 voucher and the RWAS Silver Medal Diploma Card will be awarded to a member of an Association affiliated to the WBKA winning the highest number of points in the combined open and closed classes: Gary Luckhurst

SP10 The Michael Badger Perpetual Trophy ** Awarded to the Best exhibit in the Mead Classes (Classes 28, 29, 73 & 74): Gary Luckhurst

Crystal

SP11 The Robert Edwards, Meirionnydd BKA Memorial Award to the Best Exhibit in the Meads and Drinks section. Kindly donated by Carys Edwards (2024 – 2028): Gary Luckhurst

SP12 The Robert Edwards, Meirionnydd BKA Memorial Award to the Best Exhibit in the Confectionery & Preserves sections. Kindly donated by Carys Edwards (2024 – 2028):

Christine Bradley

RWAS Welsh Royal Crystal

SP13 E H Thorne (Beehives) Ltd. £10.00 voucher - winner of class 46:

Janet Jones

SP14 E H Thorne (Beehives) Ltd. £10.00 voucher - winner of class 46:

Awen Thau

SP15 – Best Exhibit in Show – Blue Ribbon (Only awarded by a BBKA judge):

Awen Thau



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Hive configuration and over-wintering

Wally Shaw

The beekeeping year April 1985 to April 1986 was apparently appalling for bees and beekeeping and, following a long cold winter with a lot of snow, there were high winter losses. I can't remember this because we did not start beekeeping until 1987. This all happened before *Varroa* came on the scene, so this was not a factor in the losses. Selby Martin, an enterprising member of Shropshire BKA conducted a survey of members to try to understand why some colonies had survived whilst others had perished. A major factor in survival was found to be hive configuration, with 74% of hives on brood and a half surviving, compared with 51% on a single brood.

Clive and Shân Hudson's data for 2013-14 and 2014-15 concerning non-treatment for *Varroa* (published in Welsh beekeeper) show a similar trend, with colonies on a single brood box consistently having a lower overwinter survival than those on other (taller) hive configurations. These were not huge losses, but neither were the winters particularly severe during these two years. The more severe the winter the more likely hive configuration is to have an effect on survival.



Figure 1. The elongated shape of a bee nest in a tree.

Feral Bee Nests

Feral bees have to survive without the help of a friendly beekeeper who comes along in the autumn and feeds sugar syrup and is prepared to provide supplementary food in the spring if the colony is running short. The honey bee has evolved to live mainly in cavities in trees. As a result of human activity tree nesting sites are now in short supply; old trees are either harvested for their wood or felled for safety reasons. In desperation swarms take up residence in various situations in buildings. In some of these sites they can survive even though they are often somewhat different from living in a hollow tree. So, what are the characteristics of successful hollow tree nest sites?

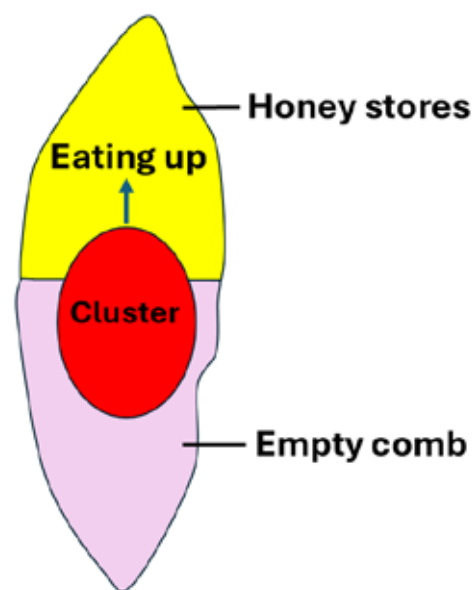


Figure 2. The typical pattern of a nest in a tree. Honey is stored in the upper part of the nest and an elongated bee cluster moves upwards as it consumes honey stores.

Early in his career in bee research Tom Seeley measured a large number of tree nesting sites and found that they had an average volume of about 40 L but that the average diameter of the cavity was only 20 cm. The average height of such nests was about 1.5 m - so a tall narrow nest is typical of a tree cavity. Figure 1 is a photograph of a nest on Anglesey which was exposed when the tree split open

in a summer storm. Only one half can be seen in the photograph because the nest has been split vertically and the other half is lying on the ground. The cavity is about 2 m tall, and the bottom part is occupied by brood and the upper part with honey. This nest was also similar to those that Seeley observed, and the entrance was about 6 m above ground level. Figure 2 shows the typical pattern of a nest in a tree cavity during the winter.

What do natural nests tell us?

Natural nests are usually tall and narrow, whereas hives are typically shorter and wider - with the extent of this depending on hive configuration. Tall and narrow has an advantage for 2 reasons:

1. Thermal efficiency for the cluster: the majority of heat loss from the cluster is through convection (cold air entering at the bottom of the cluster and exiting at the top). The smaller the cross-sectional area of the cluster (with fewer between comb seams) the easier it is for the bees to control the upward movement of air. Of course, there has to be some air exchange to provide the bees with oxygen and to void carbon dioxide. This is illustrated in Figure 3, with the arrows showing the direction of convection.
2. Positioning of stores and access under cold conditions: it is better if the majority of stores are above the cluster (and not to the side) because the bees can then eat their way up during the winter like they do in a tree nest (see Figure 2). In some hive configurations, colonies can starve through isolation when the cluster is in the middle of the hive and the stores at the side.

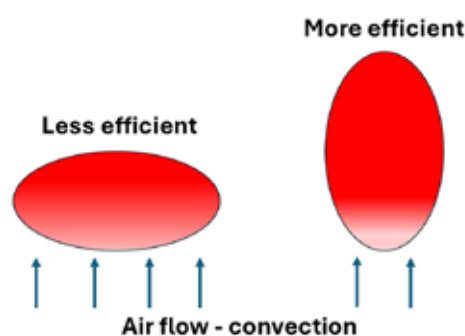


Figure 3. Air moves upwards through the comb seams and cools the cluster. Consequently, a horizontal cluster will lose heat more quickly than a vertical cluster.

The extent to which different hive configurations provide favourable conditions

The type of hive referred to below and used in the diagram (see Figure 4) is the Modified National hive but exactly the same principles apply to all the common types of hive in use (Langstroth, Smith or Commercial).

1. **Single deep brood:** has about the same volume as a typical tree nest (35 L) but with limited height, the winter cluster has to take the shape of a rugby ball lying in its side and there is only very limited space for storage above the cluster. In the spring the remaining stores are likely to be in the outside frames where the bees can have problems gaining access in cold weather. The total quantity of stores a single deep box can accommodate is also limited by the space needed for the production of brood in the autumn – the all-important winter bees.

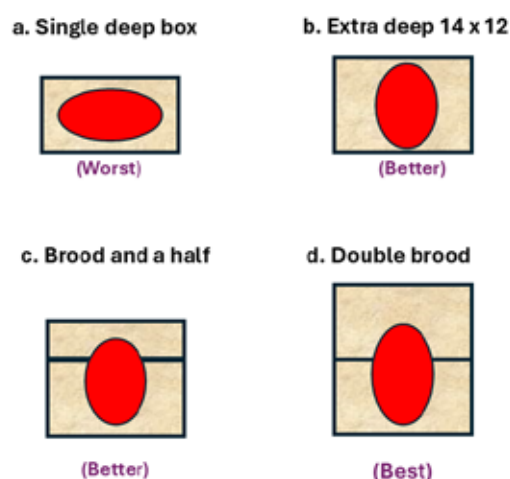


Figure 4. A single deep box (a) results in a poorly shaped cluster with limited stores above. Extra deep boxes (b) and brood and a half (c) allow better configuration, with double brood (d) closest to the natural situation.

1. **Extra deep brood 14 x 12:** this configuration has extra height and allows the cluster to adopt the shape of a rugby ball standing on end. There may still be only a small amount of storage above the cluster, but the total storage of the larger box is greater. The bees also seem to prefer the continuity of comb offered by the larger frames and no gap between boxes as in double box configurations.
2. **Brood and a half:** has slightly more height than the 14 x 12, allowing more stores above the cluster, but the gap between the boxes may be a slight

disadvantage? On the other hand, the gap does allow lateral movement of bees in warm position. As an aside, one of the worst ideas (in my view) was the old practice of removing the cover board in winter and replacing it with a piece of carpet which eliminates the bee space and effectively prevents the bees accessing lateral combs by a warm route.

3. **Double brood:** this is probably the ideal configuration for over-wintering, with plenty of height to allow the bees to adopt an elongated cluster and there is also more room for storage above. However, the type of bee that most beekeepers use in Wales does not usually require this amount of space in summer.

Discussion

Clearly a single deep brood is not a good hive configuration for over-wintering but for various reasons many beekeepers prefer this configuration. Beowulf Cooper (founder of BIBBA) always insisted that a colony that needed more space than a single deep box was not a proper native bee and he has probably been a major influence on the adoption of this practice. The beekeeper who uses a single deep box needs to be particularly vigilant about the need for supplementary feed in spring.

The limitations of a single deep box can to some extent be overcome by adding (or leaving) a shallow box/super on top in the autumn. Preferably this should be done without a queen excluder in place, but one would need to be added fairly early in the season if this box is not to attract brood. The extra deep box (14 x 12) is a good configuration for over-wintering but in the summer you either like it or you don't – personal choice. Brood and half is quite a popular choice and works well enough. If the hive is in a location where there is usually a substantial flow of ivy honey in the autumn it is not a bad idea to add a super to accommodate it and this enhances the over-wintering potential of the colony and also aids a rapid spring build-up. It is advisable to add this box after Varroa treatment if vapour mediated varroicide is used.

Double (deep) brood is probably the ideal hive configuration for over-wintering. It can be adapted to a less prolific type of bee by the judicious use of dummy boards. Each box can be arranged to have 8 - 9 frames and

the extra space occupied by dummy boards for winter. In summer dummy boards can be removed according to the requirement of the colony for brood space.

Open-mesh Floors

The way open-mesh floors (OMF's) are designed and used may also be a factor in winter survival. All that is really known about OMF use is that there is an increased consumption of stores over the winter and that colonies are slightly delayed in their spring build-up but are said to catch up later. Otherwise, there is little hard information on the effect of OMF's on over-wintering.

The first question is how the beekeeper uses the catch tray? Leaving the catch tray in place is little different from using a solid floor as far as temperature and ventilation within the hive is concerned. At the other extreme, some beekeepers only have the catch tray in place when they want to monitor mite fall or when the hive is undergoing treatment for *Varroa* using a vapour mediated varroicide (e.g. Apiguard). We belong to this latter group of beekeepers but is it the best way?

Obviously using an OMF without the tray has a major effect on conditions within the hive and the most extreme example is where traditional post-and-rail hive stands are in use, and the wind can whistle through under the mesh. A more controlled level of ventilation can be obtained by placing the OMF on a solid stand (eg. a concrete slab). This is the type of hive stand we use and the floor itself is fitted with 9 mm feet to control the airflow under the mesh. Personally, I think that the post-and-rail hive stand is incompatible with the use of OMF's but you still see them in use. Hives on an OMF with no tray in place also benefit from the use of an insulated cover board with no top ventilation during the winter.

Conclusions

It is up to each beekeeper to decide how they want to keep their bees, but they should take the needs of the colony in both summer and winter into account when they make this decision. Based on the arguments above, the tall, narrow Warré hive has a shape most like a natural bee nest and is probably the best hive of all for over-wintering. Using the same arguments, the Kenyan top-bar hive is probably the worst.

UPCOMING EVENTS

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More than nectar: understanding the forage landscape of the honey bee.

Lesley Jacques, Master Beekeeper, NDB

Honey bees use the resources of plants in a large area to meet the complex needs of the colony.

Honey bees are often described as nectar gatherers, but this simple description barely scratches the surface of what a colony requires from its environment. A successful colony depends on an ample supply of carbohydrates, proteins, fats, water, and plant resins, all gathered from a remarkably diverse range of sources. The relationship between bees and plants is therefore far more complex than the familiar image of a worker visiting a flower for nectar.

For us as beekeepers, understanding forage is about much more than identifying what may provide a good honey crop. It is about understanding how colonies function, how brood rearing is supported, why some apiaries consistently outperform others and how the landscape surrounding our hives influences colony health throughout the year.

The enormous demands of a honey bee colony

A colony of bees is a highly efficient biological machine – and a very demanding one. The colony relies on incoming resources to enable it to generate the energy to regulate brood nest temperatures to around 34°C, despite outside temperatures that may range from well below freezing in winter to (occasionally!) over 30°C during summer. At the same time, it must produce and maintain a working population that may exceed 50,000 bees during the active season. Over the course of a year a strong colony may rear more than 150,000 workers, replace winter losses, construct new comb, maintain existing wax structures, and accumulate sufficient stores to survive the winter months without significant forage.

The resource requirement to enable this is immense. Estimates suggest that a colony may consume upwards

of 109 kg (240 pounds) of honey, 18 kg (40 pounds) of pollen, around 25 litres of water and also gather 100 grams of propolis each year. Even these figures are probably conservative because the day-to-day resource flows are difficult to measure.

A landscape measured in millions of miles

Honey bees exploit an astonishingly large area around the hive. Although most foraging occurs closer to home, bees commonly work within a radius of three miles and may travel further when exceptional forage becomes available. This gives a colony access to more than 28 square miles of landscape in which, collectively, the bees may cover millions of flying miles in a year. Seen from the perspective of a single bee, the achievement is remarkable. Add to this that a forager weighing roughly 90 mg routinely carries loads approaching half her body weight and may visit hundreds of flowers during a single trip. So, in a large colony, it becomes clear how these individual efforts combine into a highly organised colony-level foraging system capable of exploiting vast areas with extraordinary efficiency.

Nectar and pollen: the colony's core nutrients

Nectar is the primary carbohydrate (energy) source for honey bees and ultimately becomes honey. Whilst nectar composition varies by plant species and environmental conditions, it is fundamentally sugary water with varying proportions of sucrose, glucose and fructose depending on the forage source. There are, of course, other constituents: nectar also contains a small percentage of proteins, minerals, vitamins, organic acids and numerous trace compounds that contribute to flavour, aroma, and attractiveness to pollinators.

Generally, bees prefer nectars with higher sugar concentrations because they provide a greater energetic return for the effort expended in collection. And the variation between species can be striking. Wild cherry (*Prunus avium*) and rosebay willow herb (*Chamaenerion angustifolium*) may offer nectar that is as little as 12-13% sugar, while white clover (*Trifolium repens*) commonly reaches over 40%, oilseed rape (*Brassica napus*) and dandelion (*Taraxacum officinale*) are around 50%, and species such as horse chestnut (*Aesculus hippocastanum*) and false acacia (*Robinia pseudoacacia*) may exceed 60%. These differences help to explain why colonies often show strong preferences for certain plants when alternatives are available.



The nectar of false acacia (*Robinia pseudoacacia*, left) has one of the highest concentrations of sugars, whereas bird cherry (*Prunus padus*, right) produces protein rich pollen.

While nectar fuels the colony, pollen provides the protein, fats, vitamins and minerals necessary for brood rearing. The percentage protein content is an approximate gauge of the quality of a pollen, and this is also highly variable between plant species. Some pollens contain little more than 13–15% crude protein, while others exceed 35%. As a general rule, pollens containing less than around 20–25% protein are considered nutritionally poor. In protein terms, the real winners for our bees are horse chestnut, goat willow (*Salix caprea*) and bird cherry (*Prunus padus*), which are all key early year forage species.

It is thought that bees cannot differentiate pollens based on protein content. They will, however, preferentially

forage on pollen that is high in lipids. Dandelion provides an excellent case in point. Its pollen is often criticised because of its relatively modest protein content (between 13-22%); but dandelion pollen is lipid rich and bees appear strongly attracted to this fatty pollen. There is a lesson here for anyone running an orchard and hoping for good pollination and fruit set: if there are dandelions below the apple trees, get the lawnmower out, as the bees may well prefer the dandelions to your apple blossom!

How flowers communicate with bees

The relationship between flowers and pollinators has co-evolved over millions of years and includes a remarkable array of signalling mechanisms. We must remember that bees perceive the world differently from humans. Their vision is shifted into shorter wavelengths of light. This means that although they cannot see red, they can see ultraviolet light. Many flowers exploit this by displaying markings that may be invisible to us but are highly conspicuous to insects when viewed in the ultraviolet. These markings are known as nectar guides, and typically direct pollinators to the nectaries in the base of the flower.

In some cases the nectar guides are visible to us: Foxglove (*Digitalis purpurea*) and pansy (*Viola* spp.) are good examples, showing clear spotted or striped patterns leading toward the nectaries.



Nectar guides on foxglove (left) and pansy (right) are visible to the human eye.

Some flowers go even further by signalling whether or not they have already been pollinated and so indicate whether there is a nectar reward waiting. Horse chestnut flowers are a classic example. Fresh flowers display yellow nectar guides indicating nectar availability. Once the flower is pollinated, no more nectar is produced; the guide markings turn red, signalling to pollinators that the flower no longer offers a worthwhile reward. Other common species employ similar strategies. Forget-me-not flowers (*Myosotis* spp.) change from yellow-centred to white-centred after pollination; white clover florets droop once pollinated, and field geraniums alter the arrangement of their stamens. These subtle signals reduce wasted visits and increase pollination efficiency for the plant and foraging efficiency for the pollinator.

The hidden world of extra-floral nectaries

Occasionally, we may see our bees working plants that appear not to be flowering and may well question what they are doing. The answer lies in extra-floral nectaries. These are nectar-producing structures located outside the flowers, often on leaves, stems, or stipules. More than 2,000 plant species are known to have them. Their primary function is not to aid pollination. Rather, the nectar will attract insects such as ants, which can defend the plant against aphids and other sap-feeding pests. Cherry trees, cherry laurel, field beans, and many other

species possess extra-floral nectaries and may attract bees even when flowers are absent or inaccessible.

The dynamics of nectar collection

If we are lucky, our bees will produce an impressive surplus of honey during the season. And although there can sometimes appear to be no 'off switch,' ongoing nectar collection is regulated by sophisticated colony-level mechanisms.

The presence of a laying queen and open brood is a strong stimulus for foraging. Scouts are often the first to locate profitable forage sources and will communicate their findings and recruit foragers to exploit the source through dance language. One of the most fascinating aspects of nectar collection is how the colony regulates effort. According to Thomas Seeley's work, the time required for a returning forager to find a receiver bee and unload her crop is a key controlling variable. Rapid unloading indicates that the colony has the capacity to process more nectar and so encourages recruitment of additional foragers. Slow unloading indicates that processing capacity has become limiting, leading to recruitment of additional receiver bees rather than an immediate reduction in nectar collection. The colony therefore regulates resource handling as much as resource collection itself.



The yellow nectar guides of horse chestnut flowers (left) signal to bees that nectar is available, whereas once pollination has occurred the guides turn red and signal that a visit is not worthwhile. Unpollinated forget-me-not flowers (centre) have a yellow centre that turns white at pollination, and clover florets droop (right).



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A major nectar flow will affect many aspects of colony behaviour. Stimulated by additional input, the queen will increase her rate of egg laying and brood rearing accelerates. Young workers produce more wax and expand the comb. Foraging effort intensifies; honey stores accumulate. In practical terms, a strong nectar flow drives colony expansion and productivity. Conversely, periods of dearth suppress many of these activities and may trigger defensive responses such as brood reduction or robbing behaviour.

Understanding these relationships helps explain many of the seasonal changes observed during hive inspections and why our bees may be less than thrilled at being inspected when there has been a sudden end to a nectar flow.

Britain's most important forage plants

Although many hundreds of plant species contribute resources to honey bee colonies, a relatively small number provide the majority of forage at a national scale. White clover (*Trifolium repens*) remains one of the most important nectar sources in Britain. Bramble (*Rubus fruticosus*) is hugely important, providing both nectar and pollen for an extended period across large areas of the countryside. Ling heather (*Calluna vulgaris*) dominates many upland regions, while ivy (*Hedera helix*) is a critical late-season resource.

The ubiquitous creeping thistle (*Cirsium arvense*) and rosebay willowherb (*Chamaenerion angustifolium*) are often undervalued despite their considerable importance to bees. And whatever we may think of invasive species, Himalayan balsam (*Impatiens glandulifera*) is one of the most prolific nectar sources in the UK.



Ivy is an important source of forage in autumn.

Seasonality is important. Early spring colonies depend heavily on willow, dandelion, cherry and horse chestnut. Summer brings clover, lime, and bramble and for some, field bean. Autumn increasingly belongs to ivy. So, the most successful permanent apiary sites are those offering continuity of forage throughout the entire season rather than a single spectacular nectar source.

Overlooked forage resources

We should not overlook the importance of water and also of propolis. Water is essential for brood food production, digestion, cooling, and regulation of humidity; a strong colony may need up to a litre per day during hot weather. Water is not stored in the colony at all, other than any that is in the crops of forager bees, so foragers must collect it and receiver bees distribute it throughout the colony as required.

Water is particularly important for evaporative cooling. The bees will spread a film of moisture across comb surfaces and fan vigorously with their wings, creating air currents across the comb. As the water evaporates, it cools the surface, helping to regulate the nest temperature.

Interestingly, bees often prefer water from dirty sources such as muddy puddles, livestock troughs or compost heaps. The attraction may be linked to dissolved minerals and salts. Neighbours' ponds always seem to be particularly attractive, so if this is the case, consider providing a water source close to your apiary. The bees will locate to a specific source however, so it is important to ensure that if you do this, there is always water available.

Propolis is equally important to colony health. Collected from tree resins and plant exudates, propolis is used to close gaps, seal cracks, reinforce comb, polish brood cells, and create a protective antimicrobial envelope within the nest.

Given how sticky propolis is, it is not surprising that its collection is labour-intensive. A single propolis trip may take one or two hours, compared with maybe twenty minutes for a pollen foraging trip, and returning foragers need help from their nest-mates to unload their resinous cargo. Poplar, willow, birch, pine, and various other trees are the primary propolis sources in temperate climates.

Recent research suggests that propolis collection is influenced by genetics as well as environmental conditions. Different races and strains of honey bee show measurable differences in propolis gathering behaviour and even in the plant species they use. Breeding from avid propolis gatherers can increase the tendency in the resulting stock. In spite of its stickiness being a nuisance to the beekeeper, given its undisputed health



benefits to the colony, propolis collection may represent an underappreciated trait and worthy of selection in queen rearing.



Propolis has many uses within the hive (left) and benefits the health of the bees, but it is difficult to collect (right).

Looking beyond the hive

Forage is therefore much more than a source of honey. It drives brood rearing, colony growth, winter survival, disease resistance and ultimately colony fitness. So, understanding the forage landscape helps us to gain a deeper understanding of how honey bee colonies function.

Ultimately, successful beekeeping requires more than just understanding some of what is going on inside the hive – we also need to understand the environment beyond the hive, especially when choosing an apiary site. The landscape as the bees see it, is not simply a patchwork of fields, hedgerows, and gardens; it can be thought of as a dynamic mosaic of nectar, pollen, water and resin resources that changes from week to week throughout the year. Clearly, a meadow rich in flowering plants will offer vastly greater forage value than intensively managed grassland. But appearances can be deceptive. Landscapes that seem attractive to humans may provide little value to bees, while apparently untidy habitats such as scrubland

and waste ground often support exceptional forage diversity. Uncut mixed hedgerows that may contain willow, blackthorn, hawthorn, bramble, and ivy will support colonies throughout much of the year. And a shallow muddy brook may provide a reliable water source during hot weather.

Often, beekeepers become students of both bees and plants. By learning more about flowering times, recognizing pollen colours, observing foraging behaviour and gradually building a detailed picture of the landscape from the bees' perspective, we can help to make better informed judgements about how best to support our colonies.

This article is based on a webinar given to WBKA members:

<https://wbka.com/wbka-webinars/> and Lesley's book gives more information.



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Learning about bees (and everything else)

Basil Wolf

Learn to learn for better beekeeping.

Beekeeping is an endlessly interesting activity where expertise comes via extended practical experience and detailed background knowledge. WBKA offers various opportunities for study about beekeeping, following the view that better educated beekeepers are more effective and keep healthy bees with enhanced welfare. However, many of us are put off such study by dark recollections of our schooldays, the thought that we have memories like sieves, or are just too old to learn new tricks. In reality, we're never too old to learn, our brains are designed to forget the vast number of trivial events in daily life, and our schools never taught us how to learn. To be fair on our schools, recent research has revolutionized understanding of how we learn, so in this article I intend to discuss what we do wrong, and give some background theory and practical advice on how to learn in a way that enhances long-term memory.

What most learners get wrong

Most people make two major mistakes that make it difficult to learn information quickly and retain it in the long term: 1. They do last minute cramming for an exam, i.e. the 'leaky bucket technique', and hope to retain enough information for long enough to make the grade, then follow the forgetting curve; 2. They use poor study techniques such as 'read and reread' that don't support effective learning. Many also believe that they have a particular learning style, e.g. they learn better by either hearing, seeing, reading or doing. There is no evidence to support this idea and research clearly demonstrates the benefits of using all styles in learning and teaching.

Why 'cramming' doesn't promote long term memory

Back in the nineteenth century Hermann Ebbinghaus investigated how quickly we forget learned information and mapped the 'forgetting curve' (Figure 1). This showed that if we make no attempt to reinforce memories we will lose them quite quickly. Memory loss is most rapid in the first hour and most of the newly acquired information will be forgotten within a few days. You might have

experienced the forgetting curve when you attended an interesting talk about bees and found that you forgot most of it surprisingly quickly.

Why is 'read and reread' not a good way to learn?

Most folk try to pack information into their brains by reading and rereading a book or lecture notes in the hope that something will stick. Sadly, it doesn't work very well because when we reread a book, we recognize the information it contains and get the false impression that we know it. Reading is relatively passive, so some people try to improve on things by highlighting or underlining the important facts and concentrating on them. Others rewrite their lecture notes in the hope that the extra effort will be worthwhile. It isn't. Much information 'learned' using these methods is quickly lost to the memory. So how can we improve?

We know that we have learned something if we can recall

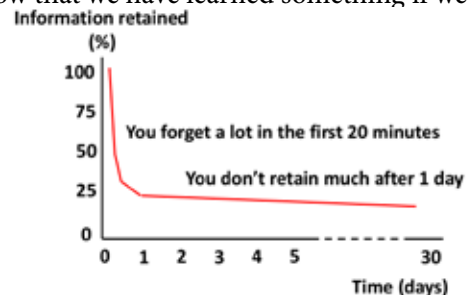


Figure 1. The Ebbinghaus Forgetting Curve, 1885. We are social animals and find it much easier to remember socially relevant information such as names and faces, and emotionally charged experiences such as a birth or wedding, a traumatic accident, or a sexual experience. Unfortunately, we take about an hour to forget most of what we heard in a lecture. This is normal, but it can make us feel that we are not good learners.

it. If you want to learn music or dance, or perform well in sport, you practise doing it. Yes, you might read a book to gain insight and advice, but it's the practice of the skill that leads to material improvement. The message of recent research is that we learn most effectively if we practise the

skill of recalling/retrieving what we have learned and then relearn the bits that we couldn't remember. Why is this?

Short-term and long-term memory

Figure 2 outlines a simple model of how the memory works. This shows that when we select and pay attention to something that we want to learn, the information is processed in short term (or working) memory and stored in long term memory for later retrieval and use.

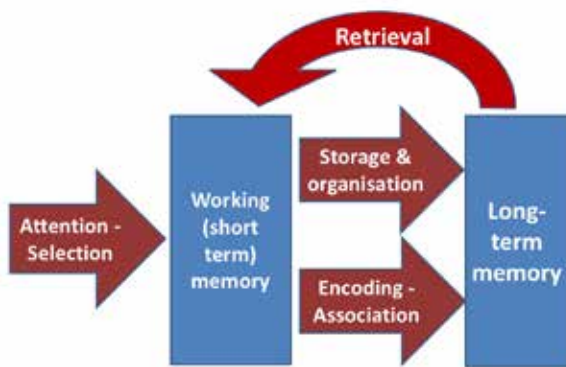


Figure 2. In this simplified model of memory, information that is selected as important and given our attention is moved from working memory to long term memory where it is linked to relevant information that has been learned previously.

Our short-term memories are thought to work with around two to four pieces of information at a time, and these are held for around twenty to thirty seconds before they are replaced with new ones. You will have experienced the limitations of short-term memory. For example, you are deep in conversation with a group of friends and can't get a word in edgeways. Then, when there's a gap in the conversation, you can't remember what you wanted to say. Taking lecture notes is difficult because your short-term memory struggles as you write, decide what to write next, and listen to the talk at the same time.

In contrast, long term memory is almost infinite in capacity and works by forming interconnected networks of neurons. Our brains are amazingly plastic and are changed by every experience that we have. They change as we store information and we change the brains of others when we pass on new ideas to them.

Different parts of a memory are stored in different areas of the brain and when we retrieve a memory, we

effectively recreate it, which means that our memories are modified slightly and strengthened at each retrieval. Consequently, repeated retrieval makes for stronger, longer memories and no retrieval leads to loss of memory. It's a case of 'use it or lose it' and 'practice makes permanent'.

Overcoming the forgetting curve

Experiments have shown that in comparison to students who 'read then self-test', those who 'read then reread' do marginally better on an immediate test. However, the 'read and test' group did much better on tests held anything from a week to one month later. This increase in long term memory after testing is known as the 'test effect' and is evidence of strengthened neural pathways due to the retrieval event. More complicated experiments show that this ability to hold information in the long-term increases with multiple opportunities to 'test and relearn', e.g. 'read, test, test, test' compared to 'read, read, read, read.'

Figure 3 shows the outcome of this 'test – relearn' routine: at each test you boost your knowledge then forget, but you forget progressively less as time goes on AND ultimately you will have reinforced your knowledge so that you will remember for much longer than you would ever do by rereading.

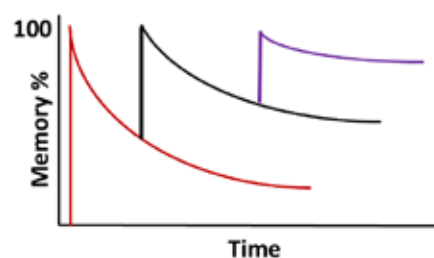


Figure 3. The red line shows the forgetting curve for a one off learning event. If we repeatedly test ourselves and relearn what we couldn't accurately recall, we establish a strong long term memory for the material and avoid panic in final preparations for the exam. In contrast, leaving revision until just before an exam results in stress, poor performance and limited long term retention.

How often should you retest? Typically, you might test and retest a few times in the first 24 hours or so, until you feel that you know the subject, then retest after 3 to 7 days and then at 3, 6 and 9 weeks, and at longer intervals thereafter. This is called 'spaced retrieval practice'.

Using flashcards in retrieval practice

Flashcards can play a central role in learning if they are used correctly. A flashcard is a card with a question on one side and the answer on the other. During a learning session you might take a pack of twenty cards (experienced learners often use many more than this) and work your way through the pack. For each card:

1. Read out the question aloud;
2. Say the answer aloud and in full. If you don't know the answer, give yourself a few seconds to try to recall it. This effort induces changes in brain chemistry that make it more likely that you will learn in step 3;
3. Turn over the card and read out the answer aloud, even if you know the answer, and try to memorize it if you failed to recall correctly;
4. Run through the pack five times, then (and only then) start to remove cards that you've answered correctly four or five times in succession.

Don't be tempted to cheat the system. Firstly, make sure that you answer correctly four to five times before you remove a card from the pack. Removing cards too soon is the major reason why some folk fail to learn using flashcards. Secondly, reading out aloud means that you read, speak and hear; the more senses you involve the more attention you give the card and the more likely you are to learn.

Prepare for pain! Humans, like any other animal, work for rewards and avoid punishment. Unfortunately, getting an answer wrong feels like punishment. But persevere and the rewards come as you realize that you've mastered the subject.

You'll also be distressed to find that you don't know the answer for a card that you 'learned' just a minute or two earlier. However, it's critical to the success of flashcards that you have time to forget between repeat views of a card. This combination of forgetting followed by enhanced learning is known as the 'spacing effect'. In contrast, the few cards that are left at the end of the pack come round too quickly and you begin to recognize them rather than remember, so add some more cards to space them out and make things more difficult.

Making flashcards

Make your own flashcards because this is the first step in the learning process and you won't do so well if you use cards made by someone else. Keep the cards simple. Short questions won't waste your time, and quick answers are easier to learn. Your questions shouldn't give clues: 'What is the capital of Iceland?' is a better question than 'Is the capital of Iceland London, Paris or Reykjavik?'

If you are learning the life cycle of *Varroa*, you might make a card for each step and learn them in order, then once you feel confident enough, start with a card from the middle. This will make you run through the earlier steps to get the sequence before going on to the later steps. After some time using flashcards, you'll feel confident enough to make more complicated cards, e.g. Describe the life cycle of *Varroa*.

Keep your cards in three boxes. One for current learning, one for three weekly testing and one for cards that you've mastered, but which should be used every now and then as a refresher. Alternatively, you could use a computer-based flashcard programme such as Anki, which has a good spacing algorithm (<https://apps.ankiweb.net/>).

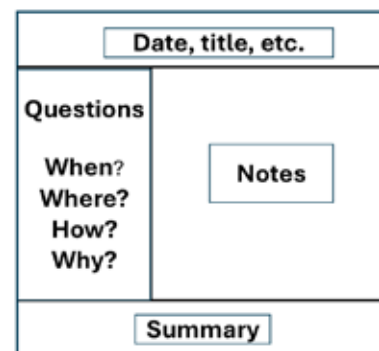


Figure 4. The Cornell system of taking lecture notes. The page is divided one third: two thirds. Notes are written during the lecture in the right hand block, leaving spaces for later additions. The left hand column is used for recall questions used in revision. These cover basic facts (when, where) and deeper explanations (how, why). A summary sentence written as the lecture closes provides for a quick review and slows the initial rate of forgetting.

I have used the example of flashcards to highlight the principles that will enhance learning in spaced retrieval practice. However, there are other methods that might be used to partially replace or supplement flashcards,

e.g. Cornell lecture notes (Figure 4) and question and answer sheets that can be carried around and used to test and relearn during the day. Active engagement in drawing annotated diagrams and writing notes and essays from memory is essential. Once you begin to master the subject it can be useful to reread the source material, to give context to your learning and make sure that you fully understood it first time round.

Association

Memory can be enhanced by linking it to something else that is particularly memorable. A word is easier to remember if 'it sounds like' another word or can be linked to a place or event. Many students add random photos to their flash cards and associate the answer with the picture. A photo of Big Ben could help you remember the Latin name for.... We also associate memories with place, so study in different places and at different times of day if you can.

Desirable difficulties

Humans usually try to avoid difficulties, but in learning they are called 'desirable' if they enhance the efficiency and duration of learning. We've already seen some: self-testing is more difficult but more effective than rereading, and spaced retrieval practice is more difficult but more effective than cramming. The spacing effect within a flashcard study session makes retrieval seem more difficult but long-term learning is better. Don't become disillusioned. No pain, no gain. Rewards come later, but they might feel a long time in coming.

Another desirable difficulty is called 'interleaved study.' Typically, we learn in blocks, e.g. AFB then EFB separately, but mix questions about these topics and your impression will be that learning feels much more difficult and mastery is delayed. The reality is that your brain must repeatedly switch between topics in interleaved study and this results in greater proficiency and enhanced long-term memory.

Organizing a study session

Negative feelings about study are so common that they are almost the normal state, but it can be very rewarding if you go about it in the right way. Procrastination is the first problem because there are so many other more

rewarding things to do. The only way to overcome procrastination is to set a time to start and meet it. But first switch off all distractions: phone, social media and internet before you begin and the work will become interesting a few minutes in.

Don't work away for hours at a time, the evidence is that our efficiency of learning declines very rapidly (Figure 5). On average, there's not much point in working beyond twenty-five minutes; some people might tire after ten minutes and others after half an hour or more. So, work for twenty-five minutes, then take a break and restart five to ten minutes later. You'll achieve a lot more than by working hard for three hours without stopping.

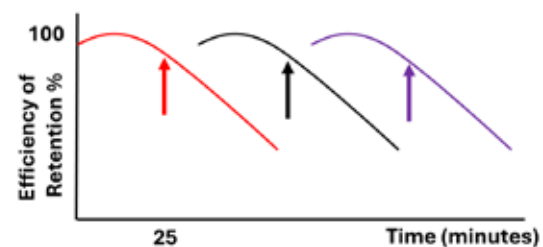


Figure 5. Efficiency of memory retention is defined as the number of items remembered divided by the number of items studied. Efficiency improves a little as we settle in to study and then falls away as we tire. Taking a short break every 25 minutes or so will restore efficiency and lead to better learning.

Work in a group

Humans enjoy social contact and there are huge benefits to motivation and learning from working in a well-organized group. This means a punctual start, a focus on the work, a defined time limit and a time to socialize (the reward) at the end.

If you test one another, you'll find that your friend demands a better answer and more thorough discussion and detail than you might ask of yourself. Explaining a difficult idea to someone else is an excellent method of learning – 'to teach is to learn twice' – and is a good way to identify gaps in your understanding. However, beware how you react to feedback. Many people see it as personal criticism and can become quite upset. Good feedback will guide your learning by indicating what you have done well and identifying where improvements are needed. Give good feedback and receive it to your advantage.

Beekeeping is a practical subject. So, learn by practice. Use some spare hive equipment to run through practical tasks explaining it as you go, and have the others assess how well you did. You'll associate every step of the task with this experience and remember it.

Metacognition

It is difficult to overemphasize the importance of metacognition. It is defined as 'thinking about thinking' and it plays a central role in successful learning. We all have some ability to evaluate the state of our knowledge and understanding, but such skills can be further developed to the benefit of our immediate learning task and transferred to advantage in our wider lives. 'Less-clever students' with good metacognitive skills that result in better organization and self-regulation can outperform more able students who lack, or fail to apply, these skills.

The first application of metacognition is to make yourself aware of what you know about yourself as a learner and what are the factors that influence your performance? Then, what methods (the subject of this article) are available to achieve your learning aims and how can you work to your strengths and improve your weaknesses?

The second application of metacognitive skills is in the control and regulation of your learning, including the planning of goals, strategies and allocation of resources. Monitor your performance during learning and evaluate your success at the end. What methods am I using to learn? Are they working? Is one method better than another? Should I change my approach? Making such judgements of the quality of learning is very difficult. Students usually associate apparent ease of learning with success but beware, such judgements can be misleading in relation to ability to remember in the long-term. In one experiment, 85% of participants retained knowledge for longer after interleaved study, but 83% of them identified blocked study as their preferred method because the apparent ease of learning was confused with depth and longevity of learning.

Monitoring learning performance during study can also improve problem solving skills. When we misunderstand or fail to understand something, breaking it down into manageable chunks can allow us to overcome the problem. Ask questions of your knowledge: What do I

know? What do I understand and is my understanding correct? Is there something that I don't know that would help me to understand this and where will I find that information? Don't avoid such problems, solve them.

Thinking about your aims

Teachers think a lot about what they teach, why they teach it and how. Bloom's Taxonomy gives a hierarchy of learning (Figure 6) that is useful for helping students set their learning targets and understand the level of achievement that is required by their examiners.



Figure 6. Bloom's Taxonomy ranks learning outcomes from basic knowledge to high order creative skills and can help teachers and students to discuss the outcomes required of a course.

At the simplest level, we can know the basic facts of our subject and move on from this to an understanding of ideas and concepts. It is important to note that you must create your own understanding, your teachers can't do it for you, and this requires some effort on your part. As a beekeeper, you will be interested in the application of your knowledge and new insights to practical beekeeping. With basic knowledge and lots of practical experience you will become quite expert. Skills in analysis and evaluation are important when you meet problems and need to seek solutions, or consider new or alternative ways of doing things, or in thinking about the applications of research outcomes. The highest-level skills are in the creation of new knowledge and ideas.

No matter the level to which you aspire, undertaking courses in beekeeping can enhance your success and enjoyment of the hobby. Using spaced retrieval practice as your study method will help you learn most effectively and lead to longer lasting knowledge. Practise retrieval. Retrieval makes permanent.

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- Entries must be submitted, by email, to editor@wbka.com, by the **31st October 2026**.
- Entries must be honey bee, or beekeeping related, must be the original work of the entrant, and must not have been winning entries in any other photographic competition.
- Photos submitted should be orientated horizontally, and should be a minimum file size of 2MB.
- Photos may be cropped, as long as the size does not fall below 2MB. Minor adjustments, including contrast and slight colour adjustment, are permitted.
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