NBH

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Bees, Trees and People: Tree Beekeeping Project in Israel
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Editorial

John Phipps, Editor, July 2023

"No Wild Honey Bee Colonies in this Country"

On the 29th May a report on the BBC's News Site commented on the large number of swarms this spring. So many swarms in fact that the beekeepers at Warwick University were running out of equipment to house the new colonies. A possible cause for this huge number was explained by university beekeeper Mr Alan Deely: "At the start of the year, temperatures remained low so (beekeepers) were unable to control the swarms. As the weather improved , they just swarmed like mad."

No problem at all with this statement, but a comment by a professor - a microbiologist and entomologist - at the university is bound to antagonise many beekeepers throughout the UK. He stated that "We only have honeybees (sic) now because of beekeepers. There are no wild honeybees (sic) in this country because honeybees (sic) are affected by a parasitic mite which feeds on their blood - it's an invasive species."

So much for the work of BIBBA over the many decades and those who allow their bees to live in a free way and by doing so colonise many wild areas - dismissed in just a few words! If he had read articles in this journal, published since 2016, he would find just how misleading was his statement.

Sadly, his comment on mites feeding on 'blood' was also inaccurate. It has been known for a long time that mites do not feed on haemolymph but on the fat bodies of bees in all their life stages.

This is an important issue. So many people take notice of such items on the BBC, even more so when experts are allowed to give their opinion. The statement needs to be retracted and corrected.

Native Bees V. Foreign Queens

Several pieces in this edition of NBH relate to two issues - the continuing debates on whether or not foreign queens have a place in British beekeeping, and whether or not skeps and other sustainable and more natural types of hives are superior to movable comb hives for housing bees.

There is a great deal of interesting material on both of these subjects in the Prologue, copied here in full, of Father Gabriel's recently published book 'Minding the Bees'. His book concentrates on the era of the "Isle of Wight Disease' which allegedly caused great losses of honey bees at the beginning of the 20th century. This was at a time when many beekeepers were not only changing from skeps to movable comb hives, but also becoming attracted by the numerous advertised benefits of foreign queens as published in the British Bee Journal, and wanting them in their apiaries. By searching through the early issues of the BBJ and by using Thomas Woodbury as a guide, Father Gabriel tries to make sense of the controversial problems which were besetting beekeepers at that time and questions whether or not beekeepers of today can learn from the experiences of those during that revolutionary era of British beekeeping.

Undeniably, the BBJ was and still is an important source of information for those troubled times. Published weekly, there are first hand accounts of the widely differing experiences of beekeepers, using the journal's pages to debate the pros and cons of the changes being made.

Whilst the adverts in the pages no doubt attracted beekeepers to new hives and queens with remarkable-sounding traits, many of those who adopted them soon found that they needed experts to help them make use of the growing trends hence, for instance, the frequent mention of beekeepers who were available to help Italianise colonies and assist with other problems.

The situation is not much different today. Bee hives are commonly now made of plastic and polystyrene-type substances, despite the problems of recycling such materials, and of course, no one can be sure what harm the components used in their manufacture can do to bees. Foreign bees are still desperately wanted by many beekeepers despite knowing that they can bring in alien pests and diseases - as well as affecting those beekeepers who are carrying out programmes trying to conserve and increase native and local strains of bees both within their apiaries and in the 'wild'.

Fortunately, these issues are now at last being challenged and remedied by an upsurge in the ranks of beekeepers on a worldwide basis who have a bee-friendly and sustainable approach to the craft.

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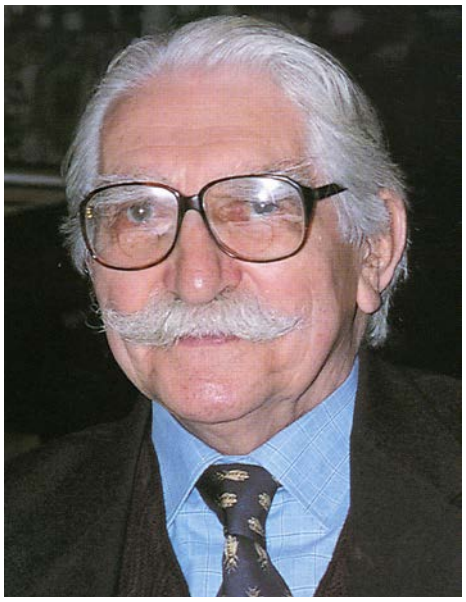
Cover photo: Apparently this spring and early summer has been good for swarms. (John Phipps).

Native Versus Imported Queens: The Controversial Issue Continues

John Phipps, Greece

Although written some years ago and taken from 'A Beekeeper's Progress' by John Phipps, (Merlin Unwin 2013), there has always been a debate on this very divided issue ever since queens were first imported into the UK in 1859, from Italy by Woodbury and Neighbour; subsequently Carniolan bees by Cotton in 1870; and from Cyprus by Blow in 1887. Following this, Brother Adam's Buckfast bees developed by mixing various bee races, and Italian bees, continue to dominate the queen supply market, making it difficult for those wishing to maintain colonies of native strains in their apiaries.



Cecil Tonsley.

A rather dashing figure, immaculately dressed in a suit complete with a silk handkerchief which overflowed from his breast pocket, took up his place on the speaker's rostrum. His well-groomed luxuriant silver-grey hair, with a neat parting, was matched by a thick well-trimmed moustache which curled round his upper lip. This was Cecil Tonsley, a popular lecturer both on the British and international circuits and the owner/editor of the oldest of Britain's bee magazines, The British Bee Journal. Long, long before the current fad of keeping bees on city roof tops, Cecil had had bees above his BBJ office in Fleet Street, and his premises had been a mecca for beekeepers travelling from abroad. During his lifetime he had achieved many prominent positions in beekeeping associations, was a respected honey judge and having a great interest in apitherapy he had written a book on the subject.

Cecil's lecture was on the importance of the Italian bee, *Apis mellifera ligustica*, in apiculture. Since its introduction into England and America in the late nineteenth century, this race of honeybee had became the mainstay of commercial beekeeping through many parts of the world including Canada, Australia and New Zealand. Waxing lyrically on the race, Cecil briefly mentioned its provenance, a valley in the Alps between Italy and Switzerland, and how beekeepers were attracted initially by the beautiful orange colour of the bees and the large easily-found queen with her burnished gold abdomen. Whilst it was true that the colour of the Italian bees was an important selling point by some of the early suppliers, the bees had to perform at least as well as the black native bees, it became clear to many that they were superior in many ways and thus well worth the exorbitant price demanded by their importers. Certainly, Cecil's description of Italian bees was true of my own experience; the bees built up well in spring, were gentle to handle and given the right weather conditions and an abundance of flowers, they produced good crops of honey. He talked about their reluctance to swarm if given plenty of room and, because they had tongues slightly longer than native bees, they could get nectar from flowers which had deeper nectaries. Whilst he acknowledged that feeding had to be carefully monitored in autumn, as the queen was encouraged by the supply of food to carry on laying eggs, he saw this as a minor problem considering the race's overall performance. He ended his talk by mentioning that although Italian queens were reknowned for their longevity, beekeepers were advised to replace them after their second full year if they desired the best results from their colonies. And, of course, he concluded, good Italian stock should only be purchased from reliable breeders or their agents.

Cecil Tonsley's lecture didn't really add anything to my knowledge of this race of bee. What he said rang true, but to keep an apiary headed by 'pure' Italian queens meant buying new queens on a regular basis, which could make a tidy hole in one's profits. To me the lecture seemed more like a sales pitch for Italian queens and undoubtedly, anyone could lecture with equal conviction on Caucasian bees or Buckfast bees. Indeed, I had tried these races too. The former seemed to be much hardier and used a lot of propolis - but I liked their grey colour, the latter hardly seemed to move on the combs during examination and were very quiet and gentle. As regards honey, I never kept individual colony records during those years, but I suspect that there wasn't a great difference between them; perhaps only that a new bought-in queen was heading the colony. Even though the temper of my colonies at that point was causing me problems, I wasn't in the market for any more queens, no matter what race they were.

Beowulf Cooper.

The next speaker was a complete contrast to Cecil Tonsley. Though conventional enough in his clothing, it was obvious that he wasn't a snappy dresser and that he was more interested in his lecture than his appearance. He had the rather unusual name of Beowulf Cooper (I learned later that his father was an Anglo-Saxon scholar at the British Museum). Beowulf too had greyish hair, swept back, and sported a moustache which still retained some of its black colour. His subject was the native black bee of the British Isles, its characteristics, why it was important

Apiary	Mark Clip	Bee Improvement and Bee Breeders Association	Mother Ref No.	Queen Ref No.

Date	Non-Jump	Non-Run	Non-Sting	Non-Follow	Frames of Stores	Q	Q Cells	Pollen	Boxes Brood	Boxes Super	Honey Taken	Sugar Fed	Remarks

Queen Description	Year Raised	How Raised	Strain	Any Peculiarities	Drone Description

Main Virtues	Main Points	Best Use of This Queen	Health Record
		Queen Breeder..... Drone Breeder..... Honey Production	

to conserve the race and how it could be achieved. He said that unbeknown to many beekeepers many pockets of native bees could be found throughout the British Isles and that they had neither completely died out due to the Isle of Wight Disease of the early 20th century, nor were they usurped by the numerous imports of bees in subsequent years. Without any reference to the previous speaker, or even a glance in his direction, Beowulf explained in a matter-of-fact, authoritative way, how the native bee was superior in almost every way to the bees brought in from abroad. For instance, their dark colour absorbed more radiant heat which enabled the bees to fly both earlier in the day and in cooler weather than lighter coloured bees. Additionally, he explained, after examining thousands of colonies in all parts of the British Isles, he was able to see that the native bees were not homogenous, but varied according to their specific environment, brought about by natural selection. Thus, you would expect to find much hardier bees in mountain or moorland locations as they were up against shorter foraging seasons and had to work often under cool and very windy conditions. He said that only by observing one's bees closely and by honestly and objectively recording the characteristics of colonies could a beekeeper have the knowledge to decide which of his bees should be selected for breeding.

I was extremely impressed by Beowulf's lecture and took home some of the literature about his association which he had made available for the meeting. From this material I learned that the British Isles Bee Breeders Association (BIBBA) was formed in 1964, although to begin with it had been called the Village Bee Breeders Association - so named because it wanted to express the idea that this was an association for those beekeepers who were interested in the propagation of a small-colony type of bee. The association had positive, wide-ranging and well-focused aims: "the conservation, restoration, study, selection, and improvement of strains of honeybees of native or near-native type suitable for Britain and Ireland".

In order to achieve these aims beekeepers were encouraged to get to know their bees by filling in purposely designed record cards which would give information about the strength, health and food status of each colony plus more specifically, from the breeding point of view, the physical and behavioural characteristics of the bees. The items dealing with colony strength and honey stores were easily to record, as it was mainly a matter of counting the respective number of frames. Quantitive recordings were also required of the characteristics of the colony which included temper - whether the bees were likely to sting, jump at you when the hive was opened, or follow you for some distance after an inspection; and how the bees behaved on the combs - particularly whether they clustered together in small groups and fell into the hive, or ran wildly over the combs. Other things to look out for were the shape of the colony's brood nest - if it was broad or tall and whether the wax cappings on the honeycombs were proud or had an air space between the wax and honey. The bees' use of propolis also needed to be recorded and, of course, the colour of both the workers and the queen. Other boxes on the record card were to do with more complex items such as the suitability of the queen for breeding, but a lot of evaluation work over a whole season needed to be carried out first.

Hearing Beowulf's lecture and reading BIBBA material, especially on colony assessment, was for me a quantum leap in beekeeping. Whilst keeping bees and harvesting honey had its own rewards, here was something with long term objectives which appealed to my curiosity.

A Stone Bee

(The Prologue from Minding the Bees, by Father Gabriel)

> I knew I had to visit the grave, the moment I saw that strange bee!

From the photograph on the computer screen it looks about six inches long, a relief-carving within an oblong recess; a queen bee fossilised in stone, or a tarnished version of those chunky insect brooches you sometimes see worn on a favourite coat. Once grey and perfect, a century has marked her with small rings of yellow and pale-green lichen growing across the entire headstone. The design reminds me of the illustrated queen in an oblong advert for Italian imports of 1921, typical of bee adverts of that time, 'Guinea Gold Queens from D. ALLBON & Co., Hitchin, the Goldens That Breed True To Colour'.[2] Or the BKA medals awarded in Victorian times at honey shows, embossed with a silver queen.

With difficulty I decipher *Annie Woodley* at the top of the stone - I think she died in her early fifties, in 1904. Beneath her name is the carved bee. Below: *William Woodley died 1923*, aged 78. Expansive and spreading lichen stains the rest of the lettering, like exploding cauliflowers of wet watercolour. The bee is disfigured and partially obscured by the lichens. If I hadn't recognised it as a queen bee, I wouldn't quite know what it was. With careful observation I might discern the long legs and the distinctive, slender body tapering to a point, the wings folded across her back. It isn't what most people would recognise as a bee. This is a honeybee queen, part of the hidden, inner mechanism of a beehive - the mainspring that powers the whole colony. Most people never see a queen honeybee so they wouldn't necessarily recognise the image, and many wouldn't have done, I suspect, even when she was new and perfectly-carved.

Beekeepers like me would have identified her straight away though, before time and nature obscured her beneath the lichens. I only know her now because I stumbled upon William Woodley's *Notes By The Way*, in archived editions of *The British Bee Journal*, and she is perhaps more poignant in her imperfect state than when she was a pristine jewel; for she seems to me like those dead queens we beekeepers sometimes find among strewn detritus on the bottom of a hive in early spring. Those shapes of honey-coloured lichen are fragments of broken brace comb and nibbled store cappings among which we might find our wrecked queen's remains, the bright enamel with which we marked her thorax last season the only remnant of her glorious, short reign.

It was that first long lockdown of the Covid pandemic in 2020 that I discovered him, or rather when he emerged from the ochre pages of an archive, the way this stone bee emerges now from the excrescences of time. I'd been reading through online editions of the *British Bee Journal* to unearth more information about the mysterious *Isle of Wight disease* that was thought by many until fairly recently to have killed the entire population of our *native Black bees* (*Apis Mellifera mellifera*) in three major episodes between 1904 and the years of the First World War. A description of what happened is epitomised by J. Vincent, writing in the *British Bee Journal* 11 March 1915:

> 'The time for the autumn driving from skeps in the surrounding villages arrived, and I determined - in spite of all that seemed to oppose me - to work up as many stocks as possible from this source, but all my work, hopes, and bees were doomed to failure, and before Christmas more than twenty out of thirty-one stocks were dead, and I felt that I could not go near the hives after I found out how things were. I concluded I had no bees left until now I find five or six colonies (driven bees last autumn) have been busy to-day. I know they were not well supplied with either combs or stores, and I found out, when too late, they had been clearing out stores from hives affected with Foul Brood and "Isle of Wight" disease. As sugar was so dear I decided to let the lot take their chance, and it is almost a miracle

> that they have pulled through up to the present. My aim has been to keep bees enough to pay my rent, and last spring I was proud to think I had got the best lot of bees I had possessed since starting bee- keeping twenty years ago — this spring 1 feel as though my bee-keeping has come to an end. It is a £40 loss to me, as all my hives, supers, shallow frames, &c., are simply useless lumber. What can I do? I cannot afford to throw more money after that I have lost.'[3]

T.A.R. of Glasgow described what beekeepers had been experiencing since the phenomenon's first appearance on the Isle of Wight in 1904, writing in the *British Bee Journal* 8 April 1915, '*The first symptoms are the bees loafing about on the alighting board and the colony showing very little inclination to work. Here and there "crawlers" may be noticed; these increase in numbers as the disease progresses*.'[4]

The mysterious Isle of Wight disease is usually referred to as a discrete crisis in beekeeping, but I have begun to question this. Beekeeping had undergone a revolution since the invention of the modern frame hive by Lorenzo Langstroth (1818-1895). His invention in 1851 had opened the door to beekeepers, not just to new beekeeping methods but to the possibilities of keeping and breeding different races of the western honeybee in much larger colonies than the native bee, which meant more honey. Foreign races such as the Ligurian, Carniolan and the Cyprian bee, which were becoming available to British beekeepers, promised to unlock the full potential of the frame hive by increasing honey production and commercialising apiculture. By the time Isle of Wight disease first appeared beekeepers had for half a century already experimented with cross breeding different races to propagate their most desired characteristics such as docility and fecundity; thereby maximising production from bees in the same way that farming had for centuries selectively bred domesticated animals and plants for food and other products.

When Isle of Wight disease emerged in 1904 half a century of British apiculture had already gone down the path of an increasing use of foreign races of honeybee, and hybridisation between them and the native British bee. Even before the appearance of this disease the bacterial disease of foul brood had been around for decades, though William Woodley and others claimed it had never been known when bees had been kept in traditional skeps. Was this mere coincidence, or were modern, untried methods with foreign subspecies and hybridisation responsible (if not for causing emerging new diseases) for leaving bees more susceptible to them than before due to what we now understand as epigenetic modification? Epigenetics is the comparatively recent science of heritable changes in gene function that can't be explained by changes in an organism's DNA, but are caused instead by something 'on top of' the DNA, such as environmental influences and diet. Was Isle of Wight disease just another disease, or a complex crisis synthesising half a century of experimentation with new methods, of which cross breeding of different races was one?

At the time there was one group who had very clear and evangelical ideas about apiculture and bee diseases, and they were the new Beekeeping Association. The first Beekeeping Association (BKA) had been started as a London club in 1874 by Thomas William Cowan (1840-1926) and Charles Nash Abbot. By 1890 it had grown, with its own governing body and Presidents in twenty-six affiliated County Associations. Whereas bees had for centuries been associated with myths and legends, a little political theory and a lot of religious symbolism, by the late nineteenth century the goals the new BKA had begun to outline something approximating a particular ideology of beekeeping. This set of ideas and assumptions appeared in the editors' introduction to the very first edition of the *British Bee Journal* in May 1873 in which the first page disparaged the superstitious cottage skeppist while focusing their efforts squarely on those who were more enlightened. Interestingly, before any text, there appeared a number of large adverts for Ligurian bees, illustrating that from the beginning the BKA's emphasis on modern methods included the foreign race of bee and not the British Black bee. W. J. Pettitt's Ligurian queens were advertised, along with adverts throughout the journals that year for Ligurian queens at 12s. 6d, or Ligurian queens crossed with English drones at 5s each.

The word *Ideology*, from the French Ideologie, is rooted in the Greek *ideo* (idea) a logos (the study of), and was first coined in 1801 by the French philosopher Destrutt de Tracy who was influenced by the earlier English philosopher Francis Bacon. Bacon stated that the destiny of science was to improve knowledge and the life of humanity. Ideology then proposes a coherent set of ideas and beliefs based upon a set of assumptions. These assumptions were clearly embedded in the early aims of the first BKA, which were to improve and advance apiculture alongside the philanthropic cause of improving the conditions of cottagers and the labouring classes. They believed from the start in the application of new methods based on science, which meant that from their origins they regarded traditional skep beekeeing as primitive, and cottager skeppists as ignorant, superstitious and in need of education. Clearly, a foundational assumption of the organisation was that the traditional straw skep was an obstacle to progress in the craft and to the advancement of the beekeeper. Beekeeping was now set on a particular course towards improving the performance of honeybees and beekeepers for economic gain.

As with all ideologies, their basic assumptions developed into new patterns of thought and practice through the subjective choices beekeepers began to make; the experimentation with different races of honeybee, cross-breeding and the application of new sciences such as Mendel's laws of heredity. These assumptions were accepted passively by most, with fervent advocacy by others, but with resistance by some. William Woodley represented this third group of people who do not accept new ideologies uncritically because they question or deny some or all of its basic assumptions. Arguably, he remains important today, not just to help us understand an important historical moment in British beekeeping, but to remind us of the need to question and examine the basic assumptions that underpin our own beekeeping, and indeed to apply critical thinking to ideologies presenting themselves today, in beekeeping, politics and elsewhere.

What is clear to me is that beekeeping for decades after Isle of Wight disease was set on a trajectory from which it could not escape because of a particular ideology it had developed. From 1904 -1919 beekeepers had searched in vain for the cure to Isle of Wight disease, as they had also struggled for years before eventually overcoming foul brood. By 1919, with British stocks decimated by disease and the need to avert a crisis in food production after World War I, the only short term answer was to import even more foreign stocks which seemed to be resistant to the disease. Beekeepers who had started keeping foreign races of imported bees as a subjective choice were now locked into a culture of keeping imported

bees out of sheer necessity in their search for bees that were resistant to Isle of Wight disease and to address the urgent need to restock in order to meet the pollination demands of British agriculture. Arguably, the problem all along had been neither traditional skep beekeeping nor the modern frame hive, but just as much (if not more) the arrival and indiscriminate hybridisation of imported stocks. After 1919 the Government restocking programme inadvertently sent apiculture down a cul-de-sac to find the perfect, disease-resistant and commercially profitable bee so that nothing like Isle of Wight disease could happen again.

After Isle of Wight disease a long term solution to the problem of susceptibility to known bee diseases was needed. One solution came from a Benedictine monk called Brother Adam Kehrle (1898-1996) at Buckfast Abbey in Devon, England, who believed (in the BKA's tradition of Enlightenment ideals) that progress in beekeeping could be made by using Mendel's laws of heredity in the relatively new field of bee breeding. By cross-breeding different races and strains of honeybee, Brother Adam's holy grail was to produce the Buckfast strain – a superbee that he hoped might answer the commercial needs of the modern beekeeper and prevent a repetition of Isle of Wight disease. The foundation of the new strain was bred from survivor stocks of this popular cross (*Ligustica* and *AMm*) at Buckfast and elsewhere, and (as evidenced in the first pages of Vol 1 of the journal in 1873) the fashion of *Ligurianizing* skeps of English Black bees.

The path British beekeeping had taken, however, would turn out to be a dead-end little over half a century later when the Buckfast bee was finally ready for commercial use. By the early 1990s the mite *Varroa destructor* had arrived in Britain, first seen in Devon. Breeders had taken European bees to Asia in the mid-twentieth century, where the mite had jumped from *Apis cerana*, the Asian honeybee, which was resistant to the parasite. It was a clear example of the spread of modern bee diseases and pests by the movement of alien subspecies and strains to new areas of the world.

With varroa, British beekeeping had reached the bottom of the sack, with nowhere to go until a treatment, rather than a cure, was found in 1997. Even then there was no way back from the cul de sac, except to continue treating, to keep the mites under control. Unfortunately, while treatments might help keep stocks alive, varroa mites only became stronger, acquiring resistance to medication. Medicated bees, on the other hand, were progressively weakened, with compromised resistance and immunity not only to varroa but to the range of viruses transmitted by the mites and to other viruses and pathogens to which bees were exposed.

This discovery of the history of Isle of Wight disease ignited my interest in increasing reports of surviving stocks of *native* Black bees (*Apis Mellifera mellifera*) or *Amm* that were thought to have been wiped out by the mysterious plague. It was there, in the pages of those old editions of the *British Bee Journal* that William Woodley emerged, a well-known beekeeper in his day, and a regular contributor to beekeeping journals. In particular, I began to appreciate a man who had embraced modern beekeeping methods during the First Industrial Revolution with its opportunities to commercialise apiculture, but also someone who still had one foot firmly in the pre-industrial world of the traditional skep and the agricultural cottage labourer. It was like finding treasure. William Woodley's *Notes By The Way* correspondence transported me back, through the pages of the old journals in which he wrote, into an age in the history of beekeeping of a long-running debate about controversies in apiculture that would completely change the way I approach the craft.

The same basic controversies are still very much alive and unresolved today. They raise questions about whether the honeybee can ever be domesticated; how we define progress in beekeeping; what constitutes the perfect honeybee; how we keep honeybees in ways that are beneficial to them as well as to us; our care for the environment and farming methods; bee-breeding and the use of foreign races of bee, bee legislation and the freedoms and responsibilities that underpin western civilisation itself. It also raises specific questions about fundamental freedoms British beekeepers have enjoyed for centuries, enshrined by Roman law and *Magna Carta*. More disturbingly, the same trajectory of a particular ideology of bee improvement and the perfect bee has arrived at a new controversy today – that of the very real possibility of a transgenic bee created by the controversial technology of Precision Breeding.

On 23 January 2023 the House of Lords voted on *The Genetic Technology* (*Precision Breeding Bill*), aimed to remove existing EU measures that prevent the development, marketing and release of precision-bred animals and plants. The Bill was passed in its report stage. Precision breeding involves a range of technologies, including gene editing, that allow DNA to be edited more precisely than with traditional breeding methods. What Brother Adam took fifty years to achieve with his Buckfast bee could, in the not too distant future, be achieved in a laboratory, with greater precision, in only a couple of years.

William Woodley has helped me to question the underlying assumptions that have brought us to this stage in beekeeping and which could take us into a development in bee culture that could be disastrous for bees, for beekeepers and for the environment. Unquestioned ideologies, whether in beekeeping, or in other areas, such as extreme environmentalism, if unexamined and accepted uncritically, could take us passively towards some very dark places – even those we might think are green, but which could turn out to be a much darker shade of green.

As I read through those old journals, there were apparent contradictions about William Woodley which further intrigued me. The great debate into which he was drawn, about the rise of bee diseases and the need for Bee Disease legislation to control them, became a fascinating area of research. Not only did I become immersed in the story of a Victorian beekeeper, but also in the enigma of Isle of Wight disease and the complex reasons why William Woodley was blamed by many beekeepers at the time for its destructive and uncontrollable consequences for British bees and beekeeping because of his opposition to Bee Disease legislation.

I began to see a strange and poignant parallel between the demise of William Woodley, the respected, famous beekeeper, and the demise of our native British bee. Moreover, I was increasingly struck by the alarming parallels between that crisis in bee keeping a century ago and the crises facing modern apiculture, comprising many of the same issues and underlying assumptions that existed when William Woodley kept his bees in Beedon, only a dozen miles down the road from Douai Abbey. Most alarming of all was the discovery that Isle of Wight disease was possibly (at least partially) caused by a reemerging disease today, known as Chronic Bee Paralysis Virus (CBPV), which has been growing again exponentially since 2007. History, it

would appear, is repeating itself, and beekeepers are still uncertain, as they were a century or more ago, about the best way forwards for the craft. A further parallel is that, as then, we tend today to polarise the debate between two different methods of beekeeping. For them the focus of debate was between the traditional skep and the modern frame hive, while for us it's treatment-free beekeeping or medicating as a way of dealing with varroa mites. Then, as now, the debate rarely focused sufficiently on the type of bee kept and the consequences of selective breeding and cross-breeding of different races of the honeybee. Then, as now, there was little debate about the underlying assumptions that form the culture (or even the prevailing ideology) of beekeeping.

My research has made me examine and question this culture and its received ideas and beliefs, together with the wisdom of many beekeeping books and videos whose underlying assumptions are often in continuity with the ones William Woodley opposed. Many books will tell you, for example, that Isle of Wight disease wiped out the native Black bee, which I have come to believe is increasingly doubtful. Many books will quote Brother Adam of Buckfast, who believed that there were no native Black bees left in Britain after1915 and that any Black bees were imported stock from France or Holland after the Great War. It is assumed that all these imported stocks were resistant to Isle of Wight disease, but historical evidence in the old bee journals suggests otherwise. There is also a prevailing belief in some beekeeping circles and many books that unless we treat our colonies against the contemporary threat posed by varroa mites we will invariably lose them in a year or two, or three at the most. Isle of Wight disease is often also retrospectively discussed as a specific ailment (such as the mite *Acarapis woodii*), though there are arguments against this diagnosis. On the topic of other pests, some books also tell you that wax moths will not attack the stored combs in your supers, but only in your brood frames – but not in my experience. Other books tell you that if pollen is coming into the hive then you must have brood and a laying queen – not in my experience. There are many more examples of beekeeping dogma that are often unquestioned. Above all, an underlying assumption is still the idea that the honeybee can be domesticated and perfected like any other species, to maximise its productive potential and commercial value – ideas which I now dispute and discourage. This has been for me a radical point of departure from the mindset of Brother Adam and a century or more of modern beekeeping.

Something similar has happened in beekeeping, exemplified by a quotation I found attached to an article in a recent edition of the British Beekeepers' Association (BBKA) magazine. The writer quoted Socrates' advice that the secret of change is to be focused on building the new rather than on fighting the old. Most might ascribe the advice to Socrates, the Greek philosopher, whereas it's actually from a fictional character, also called Socrates, in a novel from 1980. There's a real danger that in beekeeping we receive too much of our information in a similar way, relying on second hand, received wisdom that can be misleading or even inaccurate, whereas we ought to question what we read and test it against our own experience.

I began to ask my own questions about modern beekeeping a few years ago when I decided to go *cold-turkey* with the apiary here at Douai Abbey (a Benedictine monastery in rural West Berkshire), by stopping chemical medication for *varroa mites*. I continue to ask many questions and to experiment as I journey further into treatment-free apiculture, raising my own queens and advocating locally adapted bees - especially after researching the Isle of Wight phenomenon.

Many questions also remain unanswered about the discovery of that carved queen bee on William Woodley's grave stone, such as how she came to be there. Was she put there on the instructions of William, as a touching tribute to Annie who had helped him run the bee farm? Or did his second wife have the bee carved when William died in 1923 and his memory joined Annie's on the headstone? If the latter was the case, then the strange, sculpted queen bee on an obscure rural grave in Beedon parish is all the more poignant. If it came to be there after William's death, it seems not only a fitting tribute to a beekeeper and his wife, but an enduring symbol of decline and death from which we might still learn; for, like her Master, the stone bee lies in her cold, hard cell like the grave itself, a memorial not only to a beekeeper but to a type of bee and to the vestiges of an ancient way of beekeeping. She and William Woodley have faded together into the past - not just a man and his bees, but the loss of a type of beekeeper and his native Black bees from a bygone age that can never return.

Despite being a man of the First Industrial Revolution, Mr. Woodley was, I think, aware with Thomas Hardy, the poet and novelist, that they were living at a time when the remnants of the old Victorian world were passing away. One of its most enduring symbols was the straw skep, introduced by the Saxons in the fifth century when they established the ancient Kingdom of Wessex where Woodley and Hardy both lived. Even in 1915, over half a century after the invention of the modern frame hive, the *British Bee Journal* still carried photographs and articles on skep beekeeping and what must have been the last of the old agricultural cottagers; those like a certain J. Vincent who relied on skeps as part of a cottager economy; though by then the editors were the first detractors of the traditional old ways. Their mocking (or at best, patronising) tone was perhaps a foreshadowing of the virtue-signalling commonplace today: '*With all his stubbornness and assertion that "nobody can teach him nowt "and that "book larning beant no good. I went to wuk when I wure foure I did, no waste o' time at skule," we love him because there is a great deal of practical knowledge of Nature and her ways crammed into his simple brain*.'[5]

The fading image of the stone bee defaced by time and neglect also seems to me a poignant metaphor for what has happened to honeybees in the last one hundred and fifty years since beekeeping adopted its modern methods to make life more convenient and more profitable for the beekeeper. Consequently, the western honeybee has had its distinct genotypes and ecotypes blurred by constant hybridization and importation. Its resistance to emerging and re-emerging diseases and pests have been consistently compromised by chemicals, miticides and the disturbance of its adaptive genetics by rising numbers of imported queens; while many of the beekeeping methods and approaches that continue to cause its decline have fossilised like Mr. Woodley's sculpted queen. Lastly, that stone bee seems to me a symbol of what has already happened to our *native* Black bees. Like the stone bee, their genetic identity is still faintly discernible in some of our wild bee population, though obscured by a century or more of out-crossing with other races and strains. But there is a lot of recent evidence that the genetics are still there, like treasure buried in the minefield of modern apiculture, lying beneath the surface of our locally adapted wild and survivor bees - waiting to come to the surface.

William Woodley BBJ 1892.

The patina of lichens on the Woodley gravestone might also be seen as representing the dilemma faced by modern British beekeepers about the next step to take in the craft. Just as there are two conflicting views about lichen on gravestones, there would appear to be two main conflicting views about the way beekeeping should progress. There are those who would clean the lichens from the headstone, to reveal the fading memorial inscribed beneath.

This, it might be argued, runs the risk of damaging the stone where water has gone into the substrate and where the lichens have attached to it. Is it better instead to leave the lichen, with the damage it has done to a memorial, or to remove it and risk damaging the stone even further, along with the environmental damage of losing important lichens?

The problem is analogous with the dilemma faced by British beekeeping: do we stop importing queens, cease medicating our stocks with chemicals and start again with a monoculture of our original *native* bee stocks, but risk the initial collapse of our local bee population not seen since 1919; or do we change nothing about our approach and continue compromising our bees at a physiological and genetic level which will eventually lead to a crisis down the line anyway – perhaps with the emergence of a new pest or crisis equivalent to Isle of Wight disease or varroa, for which there will similarly be no cure or treatment?

Or is there a middle way between two extremes in modern beekeeping that can keep everyone happy? I propose that there is – that we focus our efforts on keeping and raising locally adapted bees, including stocks from the wild that have built up resistance to varroa mites. These bees would become genetically as close as we can get to our native Black bees, with naturally-selected traits suited to our climate and environment. Not only would we eventually not need to medicate these stocks, but we would also eliminate the risk of introducing new pests and emerging diseases from abroad. In the meantime, those who can't go cold-turkey could still medicate their bees as needed rather than slavishly following the treatment routines taught by the books. Perhaps in a decade or so we might not need to medicate our bees at all.

There was probably a middle way in Mr. Woodley's day which neither he nor the beekeeping associations could see: for them it was presented as a choice between skeps or frame-hives, with little debate about the impact of imported and cross-bred bees that had escalated since the mid-nineteenth century.

Like them, we can never go backwards, but we can go forwards in a new direction. This book explores the history and some of the latest science, to understand where we are in beekeeping and how we got here. It documents a difficult season (2021) in beekeeping at Douai Abbey during our change of direction from Buckfast bees towards treatment-free beekeeping with locally adapted bees. This new chapter of our monastic beekeeping at Douai Abbey makes the case for a proposed middle way out of the crisis of our modern beekeeping, in an effort to avoid repeating the mistakes of a century ago.

William Woodley, and even the famous Brother Adam of Buckfast Abbey, with many others, made some of those mistakes, it's fair to suggest, as we all do. Their stories and my own as a monastic beekeeper can, I think, help us (as all history can) to learn the lessons of the past century in apiculture so that we might enjoy bees and beekeeping another hundred years from now. William Woodley especially serves as a reminder not just of a type of beekeeper, but a type of British man - rooted, as we all are in the west, in certain freedoms. Above all, his greatest warning to me is of the importance of critical thinking and freedom of thought and speech which are the foundations of every beekeeper's freedoms to practice their ancient and noble craft.

The ideas, beliefs and assumptions of much of modern beekeeping since the First Industrial Revolution have emphasised attaining the perfection of the honeybee and the advancement of apiculture, mainly through education and science. Up to a point these have been worthy aims, but the over emphasis on improving the performance of the bee (for its commercial potential and its resistance to diseases) is a trajectory that might well be setting us on a course towards the next big debate in beekeeping. In William Woodley's time the debate concerned the perceived meddling of government and the imposition of legislative powers that he regarded as a tyranny over the freedoms and responsibilities of the individual beekeeper. In modern times the same issue of meddling and tyranny might be looming on the horizon in an entirely new form; it could manifest in the power, ambition and finance of Technocrats and Big Business, upheld by laws and new technology, to alter irrevocably the genome of the honeybee. For William Woodley and the beekeepers of his age the fundamental question regarding bee diseases was whether to do something or nothing. We face the same question in the face of diseases, pathogens, parasites and other contemporary problems in our own beekeeping.

Whatever course beekeeping takes it will be important for the individual beekeeper to examine the ideas, beliefs, assumptions, subjective choices and responsibilities that underpin their own beekeeping, because it is my own view that the exploration of precision breeding and the prospect of a transgenic superbee would be irresponsible, wrong and an enormous mistake. Indeed it would ally itself potentially with the prospect of a post human ideology of the Fourth Industrial Revolution that even now threatens to unleash its own new tyranny by limiting the freedoms not only of the beekeeper but of the human race. We might then see further and darker manifestations of a truth we already know - that minding the bees is inseparably linked to minding humanity.

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Commercial Beekeeping with the Warré Hive in France

An Interview, by Mateusz Viste

> "If not for a Warré hive, I would never become a professional beekeeper." Philippe Cattaruzza, France.

Philippe Cattaruzza, a French beekeeper, has for many years now worked exclusively with Warré hives. I met him at a fair in Felletin (Massif Central, France), where he has a stand with exquisite honeys and other products from his apiary. He shared with me his beekeeping experience.

Mateusz: Good morning, Philippe. You are a professional Warré beekeeper. Can you tell me how this adventure began?

Philippe: Before becoming a beekeeper, I worked in a forestry school and later as an educator in a social sector. I became an amateur beekeeper at the age of thirty, with a few Dadant hives. In 2007 I discovered Warré and then decided to go into beekeeping professionally. This I started in 2010.

Mateusz: Shall I understand that you have abandoned the Dadant design overnight?

Philippe: Yes! I do not think that I would have become a professional beekeeper if I had not discovered the Warré hive. I never liked frames and all the required manipulations. I wanted to try an alternative approach to beekeeping, closer to bees' nature. I had no business plan, I was just driven by passion, and the Warré hive opened for me the way to beekeeping that is in accordance with my beliefs. Everybody was telling me that this is backwardness but it worked for me. Yet it requires some degree of persistence, in particular at the beginning, when the hives are brand new.

Mateusz: Is it so because bees are unwilling to settle in such hives?

Philippe: Exactly. Such hives lack an attractive scent and sometimes swarms abscond. In hives based on frames you can encourage bees to settle in by offering a few already built-up frames and it makes work with fresh hives easier.

Mateusz: When I was transferring my colonies from Dadant hives to brand new Warré hives, in each Warré hive I placed three or four frames of the size that suits the hive. Earlier on I kept these frames in Dadant hives to let bees build them up. Do you think that it is a worthwhile approach?

Philippe: Yes, providing these frames do not stay put in the hive. To make a swarm settle down you can also place it for two days in a cellar. But it is extra work for the beekeeper and surely traumatic for the bees.

Mateusz: How many hives do you have now?

Philippe: Producing hives (i.e., yielding honey) – 150. Altogether I have 220, but this includes colonies started this year which I do not count as producing.

Mateusz: If I remember well, you have apiaries at different locations. Am I right here?

Philippe: That is correct. The apiary farthest from home is about 20 km away but the majority are within a 10 km radius.

Mateusz: Do you do it to limit the size of each apiary? Or maybe the reasoning is to produce a range of types of honey, depending on location?

Philippe: I do not set up large apiaries. I limit the size because I realise that bee activity negatively affects operation of other, local pollinators, in particular in mountainous areas. There is available research on this subject and I do not want to affect the existing environmental balance. All my apiaries are no greater than fifteen hives.

Mateusz: I guess that this approach also limits spread of pathogens between hives.

Philippe: Indeed, it is also beneficial in this respect.

Mateusz: Is the design of your hives exactly as the one recommended by Abbé Warré? Or maybe you have made some changes?

Philippe: My hives are not exactly as Abbé Warré describes; they are closer to the Gilles Denis variant. The bottom is 1/3 mesh, but the main difference is in the roof: it is flat and underneath is a timber top board with in-built insulation.

Mateusz: When we spoke last time, you mentioned that you do not use windows at the back of hive boxes. Is it true?

Philippe: It is true. I have no objections to glass windows but I do not see any benefits in them. To see what is going on inside I have to open the hive anyway. Also, glass increases the costs and requires additional insulation and this would affect my profitability. Instead, sometimes I put under the roof a sheet of acrylic. This allows me to take the roof off and have a quick look at the colony without disturbing the bees.

Mateusz: Currently you have 150 active hives but I guess that at the beginning you had much fewer?

Philippe: Indeed, I started with 10 hives, then over time I increased the number to 15, 20 and so on.

Mateusz: What method did you use to expand the apiaries?

Philippe: First of all, I collected feral swarms. Currently I get 40 to 60 each season, they are very plentiful in our area. Weather permitting, I also make artificial swarms. And if the weather is unfavourable, I do splits. A Warré hive can be easily split into a few so it is very easy.

Mateusz: Could you please briefly describe your method of splitting?

Philippe: This is very easy, you do it simply by separating boxes. A hive made of three boxes with brood can be split into three, making a separate hive out of each box. This is just an example. I usually split in two and, if the colony is strong enough, split again in two later.

Mateusz: Does it require that prior to a split you capture the queen? She may not be easy to find…

Phillippe: No, there is no need to do so. The queen will surely be in one of the boxes. This box will continue with the old queen while bees in other boxes can breed young queens. All this of course providing the boxes have young brood – this you need to ascertain in advance.

Mateusz: What is the other approach you have mentioned – artificial swarms?

Philippe: An artificial swarm is almost identical to a natural one except the swarming process is being triggered in a controlled way. I do this with colonies ready to swarm, often with queen cells already started. I begin by smoking the colony to make bees gorge on honey. Then I open the hive and place two empty boxes on top. Knocking on the bottom boxes makes the queen and a few thousand workers move into the added boxes. This is a very quick process and allows the creation of very dynamic families, similar to natural swarms. The splitting process is simple but the artificial swarms usually develop quite slowly because they consist mainly of inexperienced bees.

Mateusz: It seems that you use only local bees. Does it mean that you do not buy "commercial" bees?

Philippe: In the past I occasionally purchased "commercial" bees but I stopped doing so after a few mishaps. I returned to local bees acquired sometimes from abandoned hives. Early on these were black bees but over the last ten years the quality of local bees has got significantly lower due to hybridisation with bees brought in from elsewhere. The beginner beekeepers usually go for bees that they can purchase from commercial suppliers, such as Buckfast, Italians or Carniolan, to the detriment of our local bees.

Mateusz: I understand that you favour local bees. Why?

Philippe: I am of the opinion that working with the local bee stock is a rational choice. These bees were able to evolve over thousands of years together with the local environment, our climate and our biotype. Now we are creating bees that depend on humans, just like cows, sheep or chickens, unable to survive without us as they require feeding, medicines etc.

Mateusz: When doing splits or artificial swarms, do you make any specific selection? On what basis?

Philippe: I always rely on natural selection. I chose the most populous colonies assuming that the most resilient ones will show their quality through their size. Regrettably my selection is never optimal because my colonies hybridise with bees from other beekeepers and this to some degree negatively affects my results. For a successful natural selection I would have to be isolated, far from foreign bees. Also, for this reason this year I decided to medicate my bees even if I was not doing so for the last ten years.

Mateusz: On this subject – what method of fighting varroa have you selected?

Philippe: I decided to use paper strips soaked in a mixture of water, glycerine and oxalic acid. This procedure is permissible in ecological husbandry. And I use it in a very limited way – instead of the recommended three applications I use only one. It is a new approach, available for two or three years now. I have heard very positive opinions from colleagues involved in "bio" bee husbandry. This is the first method that is effective and at the same time easy to apply.

Mateusz: Do you mean that you did not treat your bees until now?

Philippe: At the beginning I tried treatments based on formic acid or thymol but I gave up on these quickly – it was highly stressing for me and for the bees. Also, the results were unpredictable and highly dependent on the ambient temperature. Moreover, formic acid is dangerous. And as for thymol, now we know that it is not that good for the bees either.

Mateusz: Did you ever use any other ways to fight varroa, such as removal of drone brood?

Philippe: No, never. But remember that if we respect the natural bee cycle, i.e., we permit swarming, it slows down varroa. This is because there is a break in the brood cycle. For this reason, our hives swarm on a regular basis, either naturally or with artificial swarming. Varroa is the problem predominantly in apiaries managed in an intensive way, where the beekeeper overfeeds colonies to maximise honey production. In such cases brood is ever-present and varroa can constantly reproduce. This problem affected me, too, to a degree this year – summer 2020 provided plentiful nectar. Honey harvest was exceptional but there was no break in brood production so varroa multiplied greatly during summer season, only to then move on to the winter bees. In consequence, in spring, I have lost 50% of my colonies where in previous seasons losses were in the 20-30% range. There is some cyclicality in it as I have noticed similar loss levels in 2015.

Mateusz: Do you calculate mite drop to assess the level of infestation?

Philippe: No, I never did this. I am able to recognise badly affected colonies by observation e.g., by noticing wingless bees. I allow these colonies to perish, I consider it to be a part of natural selection. I do the same with colonies that have lots of brood in January or February as at such time there should be none. I think that this is the result of my bees hybridising with bees "optimised" for maximum productivity, possibly by introduction of Italian genetics. Such bees cannot survive in our climate without being artificially fed.

Mateusz: Based on observations so far, do you believe that the Darwinian approach may be effective against varroa?

Philippe: I think that it may be, but I am not certain. If we did not treat from the beginning, we might have lost 95% of colonies but those that would have survived would have been resistant. It seems that this situation actually occurred in Cuba – embargo did not allow the local beekeepers to medically treat bee colonies and that resulted in mass colony mortality. Later on, Cuban beekeepers rebuilt their apiaries with feral, varroa resilient stock.

Mateusz: You have a number of apiaries spread over the Millevaches plateau. How do you decide on locations? Do you use any particular criteria?

Philippe: These are usually places I like the look of, it is a matter of intuition. I am trying to select places at various elevations. The current ones are at elevations from 600m to 1000m above sea level. It allows me to spread spring work over time and minimise weather-related losses as each apiary reacts differently.

Mateusz: I presume that you do not migrate your apiaries. Do you bring them to your place for winter to make it easier to look after them?

Philippe: My colonies winter at their permanent locations. Indeed, I do not move hives with one exception only - at the end of June I often take the young, current year colonies (60-80 hives) to a location at an elevation of 900m, close to ecological fields of buckwheat. I do this to give them the best start. At the end of season, I move them to apiaries where they will stay permanently.

Mateusz: It seems to me that 60-80 new colonies is quite a lot. Do you use them only to cover the last winter losses or do you do it for other reasons too?

Philippe: These colonies are primarily to cover the current losses but bear in mind that not all swarms prosper. As an example, this year ten swarms failed. There are also some young colonies that do not develop quickly enough over summer and in such cases I prefer to join them with other ones.

Mateusz: And what about winter feeding? Do you do it at all?

Philippe: It depends on a year. Last year I did not feed any colony. This year, considering very unfavourable weather, I have decided to feed twenty colonies. But I do it only for colonies set up towards the end of the season, the ones that did not have sufficient time to get ready for winter. Well-established colonies have to fend for themselves. When I see that a colony has low stores, I do not harvest it but expect that it should be able to winter on its own resources. Feeding all hives, as some of my colleagues do, would take an excessive amount of time. I am not interested in it.

Mateusz: Time – this is an issue. The Warré hive is not very productive, even the Abbé admits this. But he always adds that one should consider the amount of work per kilogram of honey harvested. This ratio is favourable for Warré hives. Do you agree with this?

Philippe: Indeed, this is so. But the most consuming part is honey extraction as I aim at maximising the value of the end product. I assess each comb and segregate combs in separate buckets depending on their quality. Only then I press and strain.

Mateusz: Can you say more about the equipment you use? I understand that you do not use a spinner but some sort of press.

Philippe: There is nothing special in the equipment. I use an ordinary apple shredding device to crush the comb and then strain them for a few hours. I also have a wax press used to produce honey containing pollen.

Mateusz: How many varieties of honey do you produce?

Philippe: I produce four different types of honey. Of course, it would have been the simplest to produce multifloral honey, but a more sophisticated offer meets with customer's approval and makes my stand more attractive. It also allows me to set better prices, e.g., honey with pollen sells for 12 euro per half a kilo when honey with no pollen sells for only 9 euro. And thanks to the Warré hive I can sell honey in the comb and some customers value such a product highly.

Mateusz: Your prices seem very reasonable, 9 euro for 500 g approximately equals market price of local honey in our area and your markup is really small. Does it mean that the key to profitable operation lies in offering a product that we could call 'premium' and promoting in this way the advantages of a Warré hive?

Philippe: My primary goal is quality. I am a craftsman, so I do not do mass production. Productivity of Warré hives is much lower than in Dadants, in particular with the black bees. Therefore, I have to operate in a nonstandard way and focus on quality so that I can promote my products. I have regular customers that value quality. Of course, it happens that some people unaware of my work comment that my products are too expensive. But this simply means that they are after a different kind of product. Other beekeepers sell slightly cheaper, so everyone can find something that suits him/her.

Mateusz: What is the average productivity of a Warré hive?

Philippe: It very much depends on the season. Typically, I can get 10-12

kg of honey per hive per year. In a Warré hive honey must be harvested on a full box basis and a single box has around 15 kg of honey.

Mateusz: When you harvest honey, you destroy the comb so wax does not return to the hive. It is surely beneficial for the hive hygiene but the general opinion is that this is a significant cost to the colony as making 1 kg of wax requires 7 kg of honey. Do you have any opinion on this?

Philippe: Frankly, I do not know. Possibly this is indeed the case. However, one should keep in mind that bees are very frugal when building comb. The weight of wax required to store honey is less than 4% of the total. It is next to nothing. And anyway, making wax is a natural need for bees.

Mateusz: Thank you, Philippe, for this fascinating conversation. To close it, would you have any suggestions or recommendations for those interested in experimenting with Warré hives?

Philippe: I think that at the beginning it is very important to get hold of boxes that already have been occupied by bees. It helps a lot at the start. One should also remember that the apiary should be located in a suitable area, but this rule applies to hives of all types. I often hear that we should keep bees everywhere it is possible to do so to save the planet, but this is nonsense. No point placing bees at a location where they cannot feed themselves. And it is true that the bees are essential, but there are also other pollinators around.

The interview has been conducted and translated from French by Mateusz Viste (ulwarre.pl/art/katta).
English translation by Andrew Janiak (Melbourne).
Philippe Cattaruza's website: www.lesrucheswarredubismuth.webnode.fr.
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Bees, Trees, and People

Tree Beekeeping project in Israel

Ziv, Israel

The Honey Path project. We managed to continue the project despite the challenges COVID-19 brought upon us.

It all started in Berlin. In August 2019 me and my friend Rajai Hameed attended the "Learning from the Bees" (LFTB) conference. We prepared to present our impending venture "The Honey Path" – a multicultural apiary in the What al-Salam – Neve Shalom (WAS-NS) village, Israel. You are invited to go back to issues 14 and 16 of the NBH to read my previous articles, where I talked about the background story of this venture. I arrived in Berlin by myself a few days before the conference. I planned to attend a Zedlerei – tree beekeeping workshop that the LFTB team arranged to expose the art of tree beekeeping to bee lovers from all over the world.

Tree beekeeping is a traditional approach for keeping bees that originated in Eastern Europe. The idea behind it is building a cavity inside a living tree, or a log, to attract a bee colony to get inside and set it as its home. The beekeeper could access the cavity and extract honey, instead of the old-fashioned way of locating natural colonies in nature that may be hard to find and inaccessible.

I was enchanted by this approach. It presented a natural, human-free, minimal-intrusive method that focuses on increasing colonies strength and taking care of their welfare. Back then, I enjoyed participating in the workshop and learning about tree beekeeping, however, at that time I didn't think about introducing tree beekeeping in Israel. My team and I concentrated on fulfilling our main objective - bringing together Arab and Jewish children through practicing beekeeping. We planned to use the common, easy-to-get Langstroth hives. In retrospect, it was a phase we had to go through in our "Learning from the Bees" journey – a journey of developing our natural beekeeping point of view.

The land of milk and honey (?)

Looking back in history, the land of Israel is deeply associated with bees and honey. Honey is mentioned in the bible as a symbol for prosperity and abundance. Usually, it is referred to as fruit like figs and dates, but there are few verses where it is meant for the known honey, the product of honeybees. Even though commercial beekeeping is not mentioned implicitly in the bible, discoveries show it took place in the land of Israel during these times. Archeologists found the world oldest apiary in northern Israel in 2007, dated as approximately 3,000 years old (the Bronze Age). The hives that were found there, on a solid condition, were made from unfired clay cylinders with a small hole for bees to enter and exit, and a lid for beekeepers to extract the valuable honeycombs. Taxonomic tests on bee corpses that were found inside the hives showed that not only commercial beekeeping took place in Israel, but it was very sophisticated and innovative for its time. The bees that were found were the native sub-specie of Turkey (*Apis mellifera anatolia*), as the common honeybee in Israel was the "Syrian bee" (*Apis mellifera syrica*). It implies that bee migration from far away occurred occasionally during these times. Another interesting and relevant fact is that the apiary was in a populated, urban area. From all places, why would the biblical beekeepers choose an urban area? Maybe the beehives were so valuable that it was worth protecting, keeping it close despite potential swarming hazards that may occur.

Beekeeping practices of the old times made a special bond between the bees and the inhabitants of Israel over time. Before the state of Israel was formed, both Arabs and Jewish people practiced beekeeping, and this profession was inherited over generations till today, as modern, commercial beekeeping became popular. Israeli commercial beekeepers produce between 4,00-5,000 tons of honey every year from about 120,000 hives that are placed across the country. Considering that there are unregistered beekeepers, this number is even higher. Other facts should be added to this equation – Israel is a very small country (400 times smaller than the U.S.), where most of its population lives in its central regions. Most of the hives in Israel are placed in the central region as well. It puts a strain on the environmental capacity to sustain the honeybees and other living beings. One might argue that Israel is overpopulated with hives that are condensed in a small territory. It creates undesired side effects such as lack of resources for both honeybee and wild pollinators, massive varroa infestation, and more.

One swarm, out of many

In a small country that contains lots of beehives, the most prominent consequence is the swarming phenomena. Israel is abundant of swarms going out from their mother hive into the world, looking for new, safe cavity to start their new life at. My colleagues and I get hundreds of calls every year about swarms arriving in undesired, populated places. It can be inside of an old and unused shu;er box, chimney, maintenance closet. The bees creativity with finding a home, as natural cavities are diminishing over time, is beyond imagination. It raises questions whether we are doing the right thing as natural beekeepers. Should we place more hives and introduce more places for honeybees in times where colonies produce massive number of swarms? We encourage

Ziv is removing a colony in WASNS village. One of many colonies in Israel that arrive to undesired places and require a beekeeper to remove them to a safe place. Photos credit: Inbar Za

the increase of honeybee population, adding more colonies to the overpopulated, existing commercial hives.

This dilemma takes us back to Spring 2019. My partner Rajai Hameed and I are taking our baby steps into starting the Honey Path project activity. We raised funds and partners, arranged suitable land for placing our hives in the WAS-NS area. We established a collaboration with the bi-lingual elementary school, who got us a weekly spot in the school curriculum for teaching beekeeping and taking the children to visit the hives. There was one thing we did not get – bees. Reading the above, you can imagine that getting bee colonies in Israel is not such a hard task. It takes little creativity and lots of persistence to bring a wandering swarm into your hives. We had memorable bee removal events. One of them was in Tel-Aviv, where we asked for a crane so we could safely remove a colony that set on a tree, right above the kindergarten playground. We did it and successfully got our first bee colonies. The children were thrilled to meet their new neighbors and explorer their life cycle. In the following year of 2020, the Covid lockdowns made it even easier. The streets were less crowded, and the bees kept business as usual in the following spring. We could reach the calls quicker and collect more colonies, introducing them into our apiary lot. Till the end of Spring 2020 we had 10 colonies.

We suffered from occasional colonies turnover over time. All of them perished along the way due to hunger and other pathogens. Remember the honeybee overpopulation situation in Israel? The area of WAS-NS has a variety of nectar abundant natural and cultural plants; however, it also holds around 5,000 colonies situated in an area of 4 square kilometers. Along with the occasional colony deaths, newborns arrived by themselves into the hives. We also kept answering calls and removing colonies, providing them with safe places to live in. The children were intrigued watching a new swarm introduced into the hives and following their development. Unfortunately, it was a rather short life cycle going fast from growth to demise. It raised important questions related to the colonies life continuity and long-term sustainability – are we offering the bees the best conditions to thrive? A wooden box, placed a little above the ground, with neighboring colonies living within the apiary and beyond, competing for food resources and infesting each other with pathogens?

Looking for alternative

After 2 years of activity, we were happy with our educational achievements. Our students became bee lovers and removed their old fears from these wonderful insects. We gave the children a safe environment to express their skills and get to know each other in a different way from their usual school experience. The Covid events made it difficult to maintain continuous activity, but we managed to meet with the students and continue running the project in creative ways. Our concerns about our colonies health remained a serious issue that we were not able to control because of external factors. The main one, as I mentioned above, is the honeybee overpopulated perimeter. As a comparison, I personally have 2 beehives placed on a rooftop in central Tel-Aviv. These two colonies live happily for almost 3 years with minimum intervention from my side. I don't treat against varroa or feed them. In contrast to the WAS-NS area, there aren't many colonies around the city, so my urban bees enjoy enough resources found nearby throughout the year.

The bees made their statement. It was clear to all of us that we should change our approach. It doesn't make much sense to promote natural beekeeping in an unsustainable environment. Whether than the common approach of seeking to increase the honeybee population. We are looking to concentrate our efforts on improving the existing colonies welfare and increasing their life span.

To achieve that, we decided to take a stand with the factors we have control over. One of them is the bees habitat and cavity. We planted trees next to the hives, that will supply nectar and pollen once they grow. We also grew interest to adopt the traditional tree beekeeping approach which I got to learn about in Berlin a few years ago.

I went to Augustow, Poland to visit Piotr Pilasiewicz, a tree beekeeper that promotes collaboration between Polish, Belarusian and Ukrainian tree beekeepers. He also runs the "augustowska- miodosytnia" meadery, where he makes beverages made of honey. Piotr showed me his activity and the log hives he and his colleagues made and placed in the Augustow forest. They collaborate with the authorities and UNESCO to maintain tree beekeeping as an intangible heritage, along with keeping the Augustow forest free of commercial beekeeping to preserve the Augustow honeybee unique genetic line.

With lots of enthusiasm, I went back to Israel and shared my experience with the Sustainable Beekeeping Israel NGO members. They joined my aspiration for introducing tree beekeeping to Israel. Piotr was excited into coming to Israel and lead a tree beekeeping workshop. We started a crowdfunding campaign and successfully raised suitable funds to make it come true. With







Bees, Trees and People tree beekeeping workshop. Photos credit: Inbar Zak

the help of great friends along the way, we cut logs from old pine trees that collapsed in one of the nearby forests. Removing them took a few hours, 15 people and 3 trucks. It was a tedious process, however, it felt magical seeing a group of people giving their Kme and other resources to achieve this goal.

Piotr arrived in Israel and in September 2022 we conducted the tree beekeeping workshop in the WAS-NS forest. It was perfect. 25 bee lovers joined our activity and built together 9 log hives during a 3-days workshop. We worked through the day and learned about Piotr's tree beekeeping activities during the evening sessions. We also made mead together, while Piotr told us about their tradition in Augustow – they make mead from honey collected from log hives and meet in the following year to drink it and make the next batch. I loved the group of people that was formed in the forest. People from all over the country, everyone with their own connection to bees and nature, come together to become partners of our vision to create a safe and welcoming environment for honeybees.

Optimistic horizon

The tree beekeeping workshop in Israel is only a first step. We are still facing lots of challenges to achieve our main objective of healthy, treatment-free honeybee colonies in Israel. We are having tours in the forest, introducing our project to new people who show great interest. Maybe I'm too optimistic to say that I have hopes that commercial beekeepers will show interest as well in the future. They are keen to see evidence of approaches that show healthy and long-living colonies who can handle the varroa mite and other pathogens.

I can tell that we are very happy with our achievements so far. Out of the 9 log hives we built, we kept 4 in the WAS-NS forest and already hung 2 of them on trees. One log hive was populated this spring by a swarm. We will follow its activity and already populated with colonies that happily living in their new "5-star hotel". Before next spring we will make an event where hopefully see the colony develop and thrive. We distributed the other 5 log hives to the workshop participants. Some of them were we'll hang another log hive, and explore the active colonies, which hopefully will survive the long and difficult summer conditions. In parallel we are decreasing the number of our managed hives in the area. We will still have some to demonstrate different hive types to our students and visitors. It will make a good discussion about creating ideal conditions for honeybees, while offering people the opportunity to get to know bees from a closer look, and develop a healthy relationship between bees, trees, and people.

If you'd like to comment, offer a collaboration or support our Bees, Trees and People project in Israel, you are invited to contact me at ziv777@gmail.com

(Re)wilding Bees at Iso-or-vokkiniitty

Erkki Pöytäniemi. All photos © author.

We live in SW Finland c. 90 km west from Helsinki at 60° north. I have had bees here since 2014 and I have kept bees also earlier in life.

According to conventional wisdom we are too far north for wild honey bee populations. Of course that could be questioned but maybe the main point is that with climate change it is not relevant anymore. Just the 1.5°C global temperature increase could move us to north Poland in terms of daily temperature sums[1]. The question is then not how to conserve nature as it is (we can't) but how to help it develop into something resilient in changing conditions. Then honeybees should play a role as a key species in the temperate hemiboreal climate zones.

Our property Iso-orvokkiniitty is a 12 hectare permaculture inspired homesteading farm where we live off-grid in a strawbale-clay house and do forest gardening, shiitake cultivation and bees among other things. While designing the different projects I am working on my Diploma in Applied Permaculture Design. One of the designs in the portfolio is about bees - I call the design "Caring for Bees".

Often in permaculture design linear design frameworks like SADIMET[2] are used, but in this case I am using Looby's Design Web[3]. It is a non-linear design tool which allows for free movement of thought between 12 anchor points (Vision, Helps, Limits, Patterns, Ideas, Principles, Integration, Action, Momentum, Appreciation, Reflection and Pause). Design Web allows design of regenerative cultures and living systems where the outcome can be unpredictable. In "Caring for Bees" I doubled the Design Web by reflecting about the anchor points both as myself and as the honey bees (I was bee'ing). Behind that reflection is a lot of reading and trying to understand the wild honey bee.

As a result of this reflection my own Vision became "(Re)wilding bees in and around Iso-orvokkiniitty". I listed Limits as Varroa-mites, sufficient food for overwintering, winter in general (it's long and still pretty cold), lack of nests and genetics. Actually I think it boils down to genetics and lack of nests. Genetics and allowing natural selection to work is key because we can't get rid of varroa and even with climate change, winters are still going to be long and cold. Winters will not get shorter here because climate change will not affect day length. So we need to allow the bees to develop Varroa resistance and we need bees who have an opposite strategy towards winter than the Italian and other southern breeds we use in Finland.

Beekeepers want the bee colony to be strong for the short main nectar flow from June to early July. That means strong colonies overwintering with a lot of sugar (25-30 kg) and a relatively short break in winter brooding. This is the wrong strategy for wild honeybees

1. Our apiary in January 2019.

2. Still in June 2020 the apiary was beside our garden and all the hives were there. Since 2021 I have spread the hives out on the property and there is only one hive on this spot. Top bar hives, Farrar hives and Warré hives. Buckets under the feet of the top bar hive: The Formica aquilonia wood ant attacks bee hives in the spring before they start farming aphids. They can mobilise an endless stream of ants that will finally kill the colony if not protected. If the hive legs are standing in water the ants will not get there.
3. Building two "Biboet" type log hives (inspired by Stefan Breitholtz[5])
4. Last June a swarm decided to stay under the Biboet log hive instead of going inside. I presume it was because it was a very hot week (30+C°). They were very nice Italians – I could stand just beside them without them reacting in any way. It was an ethical dilemma for us. From a Darwinian point of view they had clearly made a bad choice – they would not survive outside. Nevertheless they had entered our domain so we decided to save them into a Warré hive. Of the 7 combs 5 were brood which we cut into two Warré boxes. Honeycomb is too difficult to get into the box in a sensible way so we harvested it. This was 15th August and they only had 4-5 kg of honey and too late to forage more. So they would have starved even if inside the log. I fed them sugar and they overwintered well into 2023. So from a Darwinian viewpoint our decision was wrong?
5. We found the queen early on so we knew it was safe (plastic clip on the hive).

in the north. The time to die of hunger is in the spring (this was the same for people up to the late 19th century in Finland). If the bees start brooding early, food stores are low and the spring is cold, there will be a problem. The European Dark bees in the north knew this and had the opposite strategy, overwintering as a relatively small colony, stop brooding early and start late and thereby avoid dying of hunger if the spring is cold and they cannot fly or there is nothing to forage. Nordic Dark Bees also fly in colder weather.

In their Design Web the Bees formed their Vision as "Establishing ourselves - the Honeybees - in THE WILD around Iso-orvokkiniitty in Karjalohja". I think that is a natural thing for any biological entity to want to do - to try to establish themselves where-ever they happen to be.

The bees thought they can best help themselves by swarming and also by learning how to groom, cap cells and other behaviour needed for Varroa-resistance.

They need people to help them too. They need an environment where they can thrive: diverse and fragmented natural and man-made landscapes, organic farming (no pesticides) and gardening and orchards, lake-shores etc - here we have all that. All the farmland within 2-3 km radius is organically managed. An environmental challenge to the bees is that there is a lack of late blooming plants. With warm springs and summers everything blooms even earlier than before.

Honey bees need nests which is a challenge because forests are managed and cut down young. Fortunately big aspens have often been left even in clear-cut forests and some of them are big enough. But we should also put up log hives to help.

The bees also need us to introduce genetics that would give natural selection more material to work. A natural idea is to introduce European Dark bees that presumably have adapted better to the local conditions than the imported southern breeds. The Dark Bees in Finland have become extinct but there are a few breeders who breed Dark Bees and an association for Dark Bees (or rather the people working with them)[4]. The genetics come mostly from Sweden, partly from Ireland. The early beekeepers in late 18th and 19th centuries brought the bees from Sweden anyway.

I am presuming that we don't have free-living bees here - at least not to the degree that we could talk about a population. So in order to generate a population we also need to manage bees, i.e. be beekeepers and act as a source of swarms until a sufficient wild population is formed. For this we will employ Darwinian beekeeping (as defined by Thomas Seeley) whereby we give the bees a chance to cope with the Varroa-mite and we let natural selection work on the bees.

Finally we need the population to be bigger than what I can support on Iso-orvokkiniitty. We need to expand the area gradually around us by inspiring other people to join the effort.

My Plan

So this is my plan (the Action anchor-point in the Design Web):

1. Continue keeping bees at Iso-or-vokkiniitty employing Darwinian beekeeping strategies whatever the hive type (I have Top Bar Hives, Warré hives and standard Farrar wooden hives). The total number of hives here should be less than 10 so as not to exceed the natural capacity of the landscape.
2. Introduce European dark bees in the managed hives (buying queens or nukes from Dark Bee breeders). The Dark Bees will cross-breed with whatever other bees are in the surroundings but my bees should have a drone dominance due to not restricting drone brooding.
3. Place log hives on our property to provide nesting places for swarms.
4. Inspire and help others within flying distance from us and each other to do the same (Darwinian + Dark Bees + Log Hives).
5. Monitor wild bees in the area.

The Bees

The Bees' action points are swarming and trying to survive as best they can.

6. I had made a jig for sawing the cavities in the logs. This piece is 60 cm long – the cavity is roughly 30 litres. Rapeseed oil in the chain saw. Inside surfaces were left as they were after chain sawing.
7. 20-25 cm slices of the same log act as top and bottom of log hive. Entrance hole in the lower end is 30 mm and a second one higher up is 16 mm (small enough that they can close it if they like).
8. April 2022: Figuring out how to pull the log hive up. We had 4 pieces of 6 meter long two-by-fours attached at the top and a pulley. We pulled the hive as high as we could and built the legs under it.
9. The first log hive set up on 3 meter legs in 2022. It hasn't been occupied yet.

Ethics

This might be the place to say a few words about ethics. Permaculture is based on the three Permaculture Ethical Principles: Earth Care, People Care and Fair Share. Each design and action point should be weighed against those ethical principles. That is the wisdom part of permaculture because it makes us reflect on the wholeness the design relates to from the perspective of the different ethical principles. The Earth Care principle means that nature has an intrinsic value that we need to respect. If we for example justify our actions by ecosystem services (pollination etc) we are actually referring to instrumental (utilitarian) values which belong to the People Care principle. So People Care represents utilitarian values where People could mean myself or family or any relevant group I belong to or people in general. Fair Share is where we think about other people including future generations and how we share resources with them in a fair way.

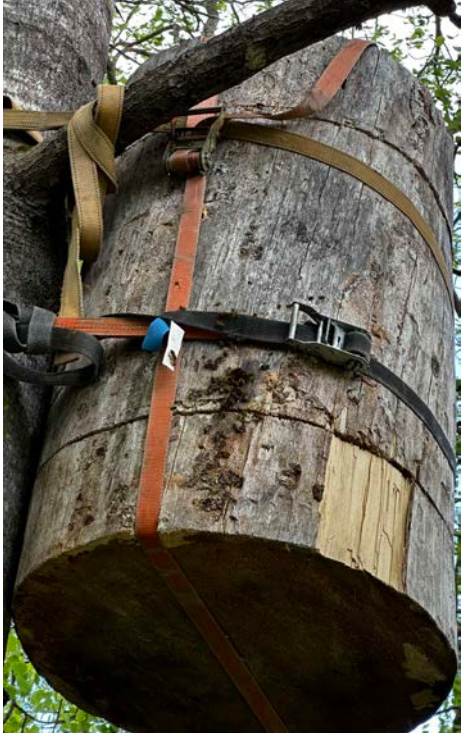
The "Caring for Bees" design is very much about Earth Care but People Care and Fair Share are also important because I believe that we need to save the honey bees also for our own sake. Of course the ecosystem services aspect is also there and we can even harvest some honey from the managed hives.

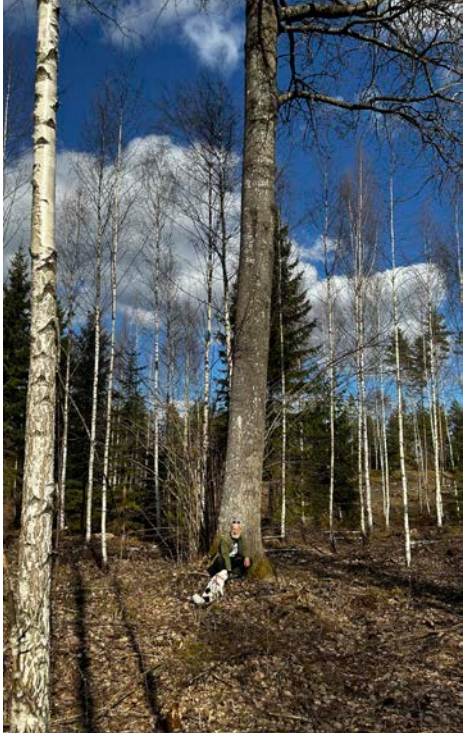
We also have ethical considerations on different levels of the honey bee superorganism. This design requires us to let swarms go knowing that most of them will not survive the first winter. We don't treat for Varroa knowing that many of the colonies will therefore die. So we have chosen to focus on the species and the right of the species for natural selection and thereby survival. All ethical considerations cannot be met at the same time.

The Path to Re-wilding

The way from standard mainstream beekeeping to rewilding is quite long and most beekeepers don't step on this transformational path at all. Personally I started with organic beekeeping in wooden Farrar hives in 2014 (organic as defined in the EU organic regulation). Soon I realized that organic beekeeping was pretty much the same as mainstream beekeeping with some restrictions. The basic framework was the same. I started looking into "Natural Beekeeping" and inspired by Philip Chandler[6] built Top Bar Hives (TBH) in 2015 and Warré hives in 2016, but still my focus was on producing honey and preventing swarming. I did sugar feeding and Varroa prevention according to Finnish standards, so the main differentiation were the hives I was using. I also held Natural Beekeeping Courses every spring.

A more profound change in my thinking started in 2020-21. I realized that the TBH and Warré hives, while better in many respects, did not offer a perfect solution for the bees. I was only half-way to somewhere else. I think reading Thomas Seeley's "The Lives of Bees", learning about Torben Schiffer's work and listening to the Arboreal Apiculture Salon podcast all had an





10. I got the log hive up into the tree with a pulley on 21.5.2023. I still need to add a roof.
11. I sprayed some lemongrass extract inside and in 2 days there was a swarm inside. Quite early for swarming in Finland and no idea if it was from my hives or somewhere else. Looks like the 30 mm entrance hole is crowded – maybe it should be bigger. So far they are not using the 16 mm hole on the other side.
12. Visiting the bee-aspen 21.4.2023 with our puppy Halti and the colony was looking very strong. The cavity is about 1 m above the lowest branch on the left – so about 10 meters high. Earlier in the spring the cleansing flight can be easily observed from yellow marks and some dead bees on the snow. The forest is heavily managed – clear-cut in the early 1990's and thinned last year. Fortunately they save the big aspen trees and there are quite a few in the area around us. This is the biggest one but I have seen a swarm go into a much smaller one.

effect and pushed me further. Finally, starting the permaculture design for bees made me analyze my thinking and what I had learned and take the logical steps towards wilding.

Implementation

August 2020 was the last time I applied any Varroa preventive measures (Standard methods in Finland are timely oxalic acid, formic acid, and thymol extract treatments and growing and cutting out drone brood.) In 2021 I built 2 "Biboet" type log hives of wooden boards and sawdust insulation and in 2022 together with some friends we made the first real log hives. In 2022 I bought Dark Bee nukes, five for myself and three were set up nearby at friends' properties. One of my Dark Bee hives did not survive the winter so now there are seven Dark Bee hives in the area (within two km radius from us). I still also have three "mixed Italian" hives. And there is one colony in a nearby aspen that survived the winter. I keep the bees according to Darwinian beekeeping principles. There are a few other apiaries nearby.

My Farrar and Warré hives were all nukes last year so they all received sugar feeding in two boxes. In practical terms Darwinian beekeeping means limited space for the colony. In late May I add a third box underneath and that is all the space they will get. It means 84 litres in the Farrar hives and 54 litres in the Warré hives. The TBH overwinters with 10 top bars (approximately 36 litres) and get a few more top bars in May so up to 60 litres (max 15 top bars). I will overwinter the hives with three boxes volume and consider feeding sugar if necessary. If I didn't feed sugar, in the spring I can check if there is any honey left for me.

Many of the colonies will swarm. If the swarm happens to be in front of me, I'll catch it - but mostly they will find their new nest themselves. That's why we need to put as many log hives as possible in the surrounding area. That is a big part of the project.

Close by to us in the forest there is a big aspen tree with the trunk diameter about 80 cm. For the last five years I have observed swarms in a cavity about ten meters high. I noticed the buzz while picking mushrooms. This spring (2023) was the first time I have observed the colony survive the winter. A reason to celebrate! I have seen a swarm go into a cavity also in a much smaller aspen close by 3 years ago. I now presume that aspen is the most potential tree species for bee cavities in our circumstances.

Last year we made seven big log hives but managed to get only one of them up on three meter legs. So far it hasn't been occupied. This spring on 21.5.2023 I pulled one of the log hives up into an aspen and sprayed some lemongrass extract inside. The next day scouting bees were examining it and also the previously set up log. Two days later a swarm was in the new log hive. On the same day I caught a swarm from the leg of our storage building and put it into a Warré hive in the evening.

Experiencing the first surviving colony in the aspen and getting a swarm in our log hive the same spring feels very empowering. It is easier to go on with the project with positive feedback from the bees!

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Do Managed Honey Bees compete with Wild Bees for Floral Resources?

What are apicultral doing to mitigate impact our own beekeeping activity has on wild pollinators?

Mark Patterson, Volunteer Forage Development Officer, London Beekeepers Association, www.lbka.org.uk

When pointing out research demonstrating managed honey bee impacts on wild pollinators, I've been repeatedly called out for being hypocritical and 'holier than thou'. I've been especially critical of companies pumping more and more managed hives into inner London where it's quickly become ridiculously unsustainable to keep the number of bees present and calling out 'beewash'!

Firstly, we've never introduced hives to inner London resulting in a net increase in hive numbers. Most of the hives we manage have been placed there by other beekeepers on behalf of clients, often more than a decade ago and we're simply the current apiary managing contractor. Whenever we take over an apiary the first thing we do is reduce the number of bee hives down to just two in an attempt to reduce our impact at that location. Since 2016 we've reduced the number of hives we manage by almost two thirds. In 2022 we reduced the number of hives in the City of London by three and were removing a further two hives in March 2023. In the last few years I've convinced five clients to give up keeping bees because I felt it was not worthwhile or in the best interests of the bees welfare.

When we have introduced bees to a new client (we've only done this three times in ten years) we have not brought bees in from outside the area adding to a net hive increase. We've only ever redeployed hives and the redeployment has been kept to within the same neighbourhood.

We keep our inner London colonies small. We don't use double brood box set-ups or over stimulate colonies to be big to maximise the honey crop. We go out of our way to explain to the clients why their bees are not as productive and that it's to minimise competitive stresses to wild bees.

Most of our bees are kept in poly hives which are thermally superior to wooden hives, the bees are healthier, and survive on fewer resources. Some of our hives like Mansion House and Selfridges are poly hives inside wooden protective lifts which are even better still.

We're delivering significant habitat investments for clients and delivering in depth wild pollinators surveys to monitor our impact and promote wild bee conservation over honey bees. If you had asked me this question five or six years ago my answer based on available published materials would have been a 'yes' but... wild bees have a variety of physiological and behavioural adaptations that allow them to compete successfully with other insects and, in a healthy environment with diverse and abundant flora, the scale of competition is probably not that severe unless there are an awful lot of hives in the vicinity. I would have also said that the mechanisms by which competition occurs are also not that well understood and more research is needed. My answer was a cautious yes.

Ask me the same question in 2023 and I'm going to say "*Yes, without a doubt - and the competition is real*". **What is it that has changed my opinion**?

Prior to 2017 the published evidence available for Honey Bees posing serious competition to wild bees was limited and is summed up in a 2017 review of 147 available studies (see here: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0189268). This review concluded that the evidence was inconclusive with highly variable results. 53% of studies reviewed showed that honey bees had a negative impact on wild bees, 28% showed no impact, others showed the opposite. Not all of these studies looked at resource competition specifically but within those that did the degree or severity of competition varied. At this time the mechanisms of competition were poorly understood and the evidence for population levels of impact was largely absent. Few if any of these studies were able to link causality with a negative correlation.

Since then there has been a wealth of new studies published which demonstrate concerning levels of competition between honey bees and wild bees. This growing body of evidence has broadened understanding of the competition mechanisms and how exactly honey bees can impact wild bees. Many of these studies have gone on to quantify the levels of impact and have demonstrated that competition from Honey Bees can have population level effects on wild bees.

Managed Honey Bees are Ravenously Hungry Organisms

We need to clarify that when we talk about honey bee competition we are referring to managed hive bees, not wild honey bees nesting in a tree cavity. Researcher Torben Schiffer from University of Wurzberg who recently gave a lecture on the subject makes some interesting comparisons which I'll describe below.

Wild native Dark European Honey Bees, *Apis mellifera mellifera* are frugal and efficient organisms. Their tree cavity domiciles are thermally efficient, they are frugal with food stores and their impact on the environment is minimal. They can survive winter into spring on as little as nine pounds of honey stores. It's generally recommended that hived bees require 30-40 pounds of honey stores to survive winter and even then many beekeepers have to feed fondant. A wild native type colony will consume 0.2%- 0.4% of the floral resources within a 1km radius of the hive leaving 99.6 % of the floral resources for other pollinators.

Managed honey bees are a totally different animal. Firstly, in the last 150 years we've forced them to live in cavernous square boxes made largely from thin wood, and since Varroa we've given them open mesh floors making them draughtier. These wooden hives are great for preventing the urge to swarm and making excessive amounts of honey, but the poorly insulated houses cause the bees to consume far more resources to maintain the atmosphere inside their nest. The bees are also compelled to fill the large volume boxes with honey and this leads them to consume more resources than the native ecotype bees living in their natural tree cavities. We've also changed the genetics of the bees we keep for honey production by importing and cross breeding with other subspecies from

warmer climates. This results in hybrid vigour and colonies which make a bigger and more profitable honey crop but consume more resources in the process. When selecting lines to breed from, beekeepers overwhelmingly select for larger colonies which produce more honey. A modern managed colony in a large hive box or even a national double brood box set up will consume up to twenty times the floral resources of a native ecotype colony residing in a tree cavity. Each managed colony consumes between 2.6% - 4.5% of the floral resources within 1km radius of the hive. Twenty-two colonies per km^2 in an intensive landscape would consume 99% of the floral resources leaving little for other pollinators.

In nature, or even in the old days of keeping native honey bees in straw skeps, the impact of a dozen colonies per km2 was the equivalent of one large modern colony. Add to this that we have far fewer floral resources than we did 100 years ago and its very easy to see how large numbers of modern managed Honey Bee hives can swallow up available floral resources making life challenging for wild bees.

Competition mechanisms

Recent studies have shed light on the mechanisms of honey bee competition and how it affects wild bees. When honey bees forage, they spill out of the hive and disperse across the landscape in search of floral resources. At first they will exhaust the forage nearest the hive before dispersing further outwards. When this is depleted they will disperse further out again, and again and again and can easily reach a 3km radius of the hive in summer. They can forage as far afield as 12 km according to research by University of Sussex. As they disperse outwards they create a halo effect around the hive/apiary. Nearer the apiary floral resources are depleted quicker and visited more regularly so they are repeatedly depleted as the plants recharge the nectar supply. Further away from the hive the visitation rates or density of foragers visiting flowers tends to reduce.

Numerous studies have shown that, within the halo area of a hive or apiary, flowers contain fewer pollen grains than those on the same types of flowers further away from the hives. It's also been shown that these plants nearer the hives contain less nectar because they get visited by the honey bees more frequently. So even if you're a long-tongued bee with physiological adaptations evolved to be better adapted to a particular bloom, the sheer number of honey bees visiting a patch of flowers can deplete the nectar you're competing for.

Numerous recent studies have demonstrated that within the halo area of a hive/apiary the abundance of wild bees is reduced. Two studies published autumn 2019 studying bees in urban Paris and in southern France both reported that wild bee abundance was halved within 600 meter radius (halo area) of honey bee apiaries and that larger apiaries resulted in the same effect but over a larger halo/radius. The southern France study also demonstrated that the foraging success of wild bees was halved in proximity to honey bee apiaries. This lead to a decrease in reproductive success and a gradual decline in species abundance over successive years. This study was one of the first to successfully link causality with correlation, something many previous studies had failed to demonstrate. The study found that pollen and nectar was substantially reduced within the halo area of the apiary and that wild bee foraging success was significantly reduced, fewer nests were provisioned resulting in a reduction in the population the following year. It's worth noting that the study also found that within the halo area Honey Bees foraging success was also reduced which highlights competition between hives and raises welfare concerns.

It's worth noting that the southern France study was undertaken in pristine rural florally rich habitat where there was a seasonal super abundance of forage, yet despite the healthy environment the presence of 15-30 honey bee hives per km2 had a significant impact on wild bee survival and reproductive success. This makes me question my previous thoughts that '*in florally diverse and abundant environment the scale of competition is probably not that severe*'. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0222316 & https://www.nature.com/articles/s41598-018-27591-y

My Conclusions

Having studied the findings of recent research on the subject and heard explanations from a number of experts (some of whom carried out the work) I'm now convinced that managed Honey Bees are contributing to wild bee declines.

This is a tough pill to swallow for beekeepers, particularly commercial bee farmers who rely on placing large numbers of hives in florally abundant areas to make a honey crop amidst a hostile commercial market undermined by cheap foreign imports and adulterated products.

Many beekeepers question the evidence pointing out that prior to 1900 there were significantly more hives than today and that most of the studies were conducted abroad. Firstly, the managed bees we keep today are a completely different animal than those we kept 100+ years ago and, as pointed out earlier, are larger, consume more resources and have an impact up to twenty times greater than the native wild Honey Bee kept in days gone by. Secondly, we've lost 98% of the flower-rich meadows and half of our hedgerows since the 1950s. The UK sits in the bottom 10% of most biodiversity/nature depraved nations in the world and is ranked least biodiverse nation in the G8. Studies conducted in continental Europe, where floral resources are far more abundant than in the UK, demonstrated serious levels of competition and impact on wild bees. If these studies demonstrated concerning levels of harm in environments healthier than the UK then its reasonable to assume the impacts here are just as if not more serious. Note that in the Study by Gruter et all referenced earlier, it was stated that the evidence was that honey bees foraged further afield and applied greater competitive pressure on wild bees in environments which were food limited.

Also, many beekeepers do not have an academic or science background and find the published works difficult to read and understand. Many simply state they don't make sense and refute them. There's a need for improvement in how we convey these findings in laymen's terms particularly to hobbyist beekeepers so they can understand the importance of such research and its implications for beekeeping.

It's not the honey bees fault we are in the situation we are in, and we must not 'bash' honey bees; it's a manmade problem. We've changed the landscape, reduced the floral resources, meddled with the bees' biology, morphology and behaviours through breeding programs and forced them to live in thermally inefficient, resource-costly, man-made boxes.

Beekeepers - give other pollinating insects a chance!

Butterflies and moths, velvet ants, solitary wasps and bees, flies and many other insects all help in the valuable work of pollination!

Not only in cities and urban areas

From the Editor: For thirty years I kept bees in an arable part of North Lincolnshire. It was not an ideal place in many ways, but chiefly because of lack of foraging sources for bees throughout the whole year. Mainly treeless, with hedges removed or cut back almost to the ground and with crops grown to the very edges of the fields, wild flowers were at a premium. Crops grown were mainly potatoes, sugar beet, wheat, barley and forage maize.

A somewhat mixed event was the arrival of many fields of oil seed rape. Whilst the crop provided lots of honey, some of the advantages were lost through trying to get round the problems of aerial spraying, the rapidity of the honey granulating, plus trying to find outlets for sales with so much increase in honey production.

New crops were on the horizon which I looked forward to. Bees taken to some new type of clover grown for seed produced no results. Flax/linseed appeared but proved useless, too, as a crop for bees. Greater promise arrived within the county and in Humberside with the cultivation of borage and phacelia, but none of it unfortunately near enough to take my bees.

Thus, bees (forty colonies), once they had been moved from the rape, needed new sites. Keeping them together in one place would be useless for both the bees and any wild foragers that they could compete with.

I 'drew' a circle around my home and using a radius of two miles found sites more or less equally spaced on the circumference and placed no more than six hives in each place. The drive round to each site made a wonderful ride and dealing with just six hives on each site was just right!

The sites differed enormously, some quite near villages with gardens, others in woodland, the rest in open countryside. Those in the forests were most at risk from falling pine trees and woodpeckers, and in open country from vandalism. So usually in winter I brought them into my home apiary.

What can beekeepers do to reduce their impact on wild bees?

- Keep fewer colonies. The threshold for impact being noticed is 3.5 managed colonies per km2.
- Keep smaller colonies. Smaller colonies create less competition and consume fewer resources.
- Keep native eco-type bees, don't import foreign strains.
- House your bees in more thermally efficient hives by either cladding wooden hives in cork or using poly hives which are 76% more thermally efficient.
- Ditch open mesh floors. Draughty hives increase resource consumption.
- Don't place apiaries within 2.2 km of nature reserves and areas of importance for wild pollinators.
- Keep your bees healthy to avoid pathogen spill-over which is an additional problem to floral resource competition.

In the original article the author quoted from additional research papers that support his conclusions. They can be viewed on www.lbka.org.uk "Do Managed Honey Bees compete with Wild Bees for Floral Resources?"

Swarms - Spring 2023

A brief look . . .

I was hoping to provide an up-to-date account of this season's swarming but, as mentioned in the Editorial, this aspect of honey bee behaviour was delayed in many areas and thus as yet I do not have enough data to make a realistic survey.

I do have though some interesting accounts from various sources which show that swarms are readily making their homes in bait hives - both within beekeeper's apiaries and in the 'wild'.

Greece

Here in Greece, despite the huge numbers of colonies in my area (several apiaries with upwards of 50 to 100 hives brought here for the mountain sage) only one swarm took up residence in a bait hive which had been cleaned up and aired for such an event. Their new home is my 'Ukrainian' bait hive, in which the previous colony had recently come to an end. The swarm was able to make use of a good number of clean combs and now, with temperatures in the upper 30Cs and lower 40Cs, the bees fly throughout most of the day. I have mentioned at other times that the location of the hive does not in any way fall in with the usual recommendations for attracting a swarm - it faces north, it is in the shade for most of the day and the single entrance is less than one metre from the ground.

Left: 'Ukrainian'Bait Hive, outside my office window. The swarm was enormous. Right: The new colony had some good clean combs which have helped them to rapidly extend their nest.

Patience Rewarded

I was very pleased to hear from Simon Ferris in the south of England who some time ago had set up a bait hive in his garden hoping to attract a swarm. Last year, frustratingly, a swarm flew over his garden and took up residence in the hollow stump of an ash tree. This year, his reward arrived:

"*As I hoped, the colony that was in the neighbour's ash tree last year, swarmed. It happened on the the 19th May. Our neighbour said he had seen a swarm the previous day, so perhaps this was a cast; I'm not sure.*

It formed two clusters in a small bush in our garden - I should probably have done nothing and waited to see what would happen. Nevertheless, I used a skep to catch the bees and to transfer them into one or two Warré boxes from a hive set up nearby.

I thought all was going well, but alas, I hadn't caught the queen (actually, there may have been two, one in each cluster). There were bees on the ground below the bush where the queen(s) might still have been - and soon the bees from the Warré hive joined them.

It was then that it thundered - rain was on the way and the bees were in a state of confusion. I quickly placed a wooden shelter over the bees on the ground with a skep nearby for them to go into.

On the 21st May a swarm went into the Warré hive, and now I have two colonies - for whilst I only put the skep in place as a temporary shelter the bees seem to have made their home in it. Traffic was patchy at the Warré hive but those in the skep are very active."

Warré Hive and Skep in Simon's garden - occupied at last!

Douai Abbey

"I have been successful this year with swarms. Swarm Alley here (as I call it) has delivered seven swarms this season, through May and June, to my bait hives.

I have two survivor lines of queens now (I call them Grace and Megan) which have been treatment-free for at least six years now. These lines came from one queen that was raised from the original wild swarm I caught from Kelly's Folly several years ago and which was never treated, so the apiary went through a genetic bottleneck that year and I believe the two survivor lines have inherited their resistance genetics from that queen". Father Gabriel

From Susan Knilans, USA

"This year, two over-wintering colonies at my old home (one in a skep, one in my bedroom wall) produced several swarms each (I was not able to witness them, but was told about them.) One of the swarms from the wall hive moved into an empty hive in the front yard. I gathered one of these and placed it in a skep in my new home in mid-May. I gathered another swarm several miles away on June 10th. This swarm also went into a skep. The first colony is building up nicely. The second colony has yet to get a new queen mated. Neither of these swarms had a single drone in them! The June swarm seemed odd: it was very large, but very undirected, with bees ambling all over, and taking two days to march into the skep (something that usually takes no more than an hour). We have had a lot of swarms in the area, but they are all behaving rather oddly: not clustering well, keeping several clusters overnight and not joining up, and not behaving "queen-right" in any normal sense of that word. I was pleased to see my June swarm build a quick and thick propolis door in the bottom entrance to the hive!"

From Paul Sheppard, Central France

Home apiary three hives, two swarmed. Early April - Weather was cool, heavy flowering of fruit trees. No late frost. Caught one swarm in a bait hive, the other disappeared into the forest.

Early May - Caught one feral swarm for a friend 25km away. Caught one swarm 15 km away in a new apiary. Origin a nearby forest - may have to feed. To date no increase of stores.

Early June - Did a cut-out in an upstairs window for same friend of a recent swarm. Five combs, gentle dark bees,origin nearby forest.

June - hot 30 degrees; Chestnut, Tillieul, flowering heavily.

Overall I'd say a good early start to the year but a cool wet spell in late April stopped the trend. All swarms placed into Dadant hives. I would say it has been a slightly above normal season based on the local chatter.

Except for the swarm that got away, the general swarm size has been small - just 2 to 3k bees

Robin Pigot, North Mississippi

North Mississippi: this swarm season was atypically late and spread over time. The first swarm collected in a bait hive was on May 5th which is three weeks later than usual beginning of season. First two weeks of March were ideal to build the colony followed by two weeks of rainy and cold weather. Colonies either starved or receded consuming the larvae. The surviving colonies took time to recover.

Nine swarms collected in bait hives and five in tree hives so far. Half to a third of a usual season here. The season is not over and the high temperature and frequent rain brings abundant blooming.

Robin Pigot and Swarm.

Book review

Minding the Bees – A Vision for Apiculture at Douai Abbey

Gabriel Wilson

364 pages
18 colour illustrations
Northern Bee Books
(Peacock Press)
ISBN: 978-1-914934-59-9
List price: £30

Reviewed by David Heaf

Gabriel Wilson, formerly an English teacher, is a Benedictine monk living at Douai Abbey which is situated in rural Berkshire, UK, half way between Reading and Newbury. At the Abbot's request he took up beekeeping in 2015 and runs UK National hives wintering about a dozen colonies in 2021-2022. His methods are largely those of a conventional hobby beekeeper, including making splits for colony increase and swarm control, but what really whetted my appetite to read the whole book was his revealing early in it that he had gone 'cold turkey' as regards chemical treatments against varroa, with the intention of letting natural selection get to work on his bees. Like much of medicine, chemicals treat symptoms but not the underlying problem. At the same time he stopped counting mites and adopted a more relaxed attitude to swarming, setting up several bait hives (swarm lures) to attract wild swarms which he surmised may already have acquired some ability to cope with varroa. Mentioning epigenetics and DNA methylation, he is encouraged by research showing that adaptive mutation can be quick and suggests we should let the bees themselves select the variety of traits they need for survival.

The structure of the book comprises three main threads running throughout, the least voluminous and more poetic of which is Wilson's description of events in nature throughout the seasons, for example:

> "A kite glides over sunshine and frost against pale-blue sky, turning and banking like something made from balsa wood and fabric, or floats behind the black, lino-printed trees, huge and terrible and Jurassic. [...] The melting moon slides across the teflon-dark pond like a lump of lard."

A second thread is the author's beekeeping activities throughout the year and into a second beekeeping season. Various buried clues indicate that the year is 2021 and only near the end of the book do we discover that he stopped treating with chemicals four years previously, i.e. in 2017. He had high losses in 2021-2022, mainly of nucs and captured swarms, but five out of six brood-and-a-half production hives survived and gave him a honey harvest in 2022. That his harnessing of natural selection is incomplete is clear from the fact that he is careful to ensure that his colonies are properly fed with fondant and pollen candy. This is understandable in that withdrawing both varroa

treatment and artificial feeding at the same time could cause catastrophic losses. Stepwise withdrawal would therefore be preferable. This thread is enhanced by comments on bee behaviour and biology, including genetics. His assertion that robber bees steal pollen is questionable (page 30).

By far the most substantial thread throughout the book is Wilson's discussion or musings on various topics to do with beekeeping, and indeed anything else that he deems worthwhile including, sometimes resulting in long digressions such as the story of the Dorset button makers. It is difficult for this reviewer to find any sort of order in this thread so topics included in it will be discussed one by one. Wilson's primary resource for UK beekeeping history, with 140 citations, appears to be early issues of the *British Bee Journal* (BBJ) available at archive.org. What especially engaged him here were William Woodley's (1845-1923) writings, headed *Notes By The Way*. Wilson's title is taken from Woodley's account of his aunt asking him as a seven year old to mind her bees, i.e. watch for swarms issuing. Woodley, mentioned 349 times, is presented as an example of a beekeeper standing at the transition in beekeeping from skeps to frame hives. Whereas Woodley, who challenged modernist ideologies and stressed the 'importance of critical thinking and freedom of thought and speech', became, by UK standards, a successful bee farmer with 200 stocks on frames, he nevertheless supported the cottager skeppist whose way of beekeeping he saw threatened by early 20th century efforts towards beekeeping legislation, supported by the Beekeepers' Association of his day, that promoted the relatively unaffordable wooden hives. Woodley had never seen foul brood in his skeps. The annual renewal of comb inherent in skep management is good for bee health. (Émile Warré in France and August von Berlepsch in Germany considered that foul brood incidence was increased by frame hives. Modern research in Serbia by Tarik *et al.* (2019) has revealed the presence of foulbrood pathogens in commercial hives but not in the traditional skep-like hives still used in the country.)

Another sub-thread in Wilson's musings concerns the 'mysterious' Isle of Wight disease which emerged in 1904 and is mentioned 255 times throughout his book. Much is conjecture and speculation from the BBJ, plus insights in articles by Brother Adam and Leslie Bailey. I'm left none the wiser as to the cause of the disease, assuming, that is, it was ever a single disease. But it provides Wilson with an opportunity to weave in his criticisms of the practice of half a century of importing queens, which may have contributed to the disease due to their carrying pathogens or to their maladaptation to the UK climate and pathogen spectrum, plus cross breeding from such queens.

A major component of the musings thread is devoted to bee breeding and to the work of another Benedictine monk, namely Brother Adam Kehrle (1898-1996) of Buckfast Abbey (Devon, UK) who is mentioned 191 times through the whole book. Wilson writes:

> "There are many more examples of beekeeping dogma that is often unquestioned. Above all, an underlying assumption is still the idea that the honeybee can be domesticated and perfected like any other species, to maximise its productive potential and commercial value – ideas which I now dispute and discourage. This has been for me a radical point of departure from the mindset of Brother Adam and a century or more of modern beekeeping." (Page xii).

But on page 285 he writes: "Brother Adam's extraordinary life and work must also win our admiration" and on page 296: "Some might think that because I have rejected the Buckfast bee and some of the assertions and assumptions proposed by Brother Adam I must necessarily be critical of the whole enterprise of his career in apiculture. This is not the case...". Wilson particularly commends Brother Adam's diligent travels to identify ecotypes of *Apis mellifera*.

Wilson's doubt that Isle of Wight disease wiped out the native British black bee is to some extent supported by modern DNA analysis showing that *Apis mellifera mellifera* genetics is still present in relative purity in parts of the country. Whilst he holds that UK beekeeping attempting to return to the pure black bee could be damaging to damaging to the native bee, he supports the idea of working with local bees, believing with Beowulf Cooper that the dominant native traits in the DNA of local bees could surface again provided that they are not constantly subjected to outbreeding depression through exotic bee imports.

Wilson's discussion in Chapter 10 borders on a rant when he deals with modern bee breeding, in particular the proposal of technocrats to make genetically modified (GM, transgenic) bees, which he refers to as 'frankenbees'. He poses 23 questions about GM bees. This deep concern of his is not unconnected with what he regards as 'dark green' environmentalism, which I identify with ecofascism. The following quotes show examples of what worries Wilson:

"There are those, like Greta Thunberg, who rant irrationally about our use of the earth's resources and shout at us that modern technological progress and lifestyles are destroying the earth, demanding zero carbon emissions overnight and crazy targets that can only be achieved at the expense of people's lives. I don't subscribe to this simplistic and dangerous view, and I see it as a new green tyranny not far away from the green tyranny of the Nazis." (page 145).

> "We worry about an unelected global elite with ambitions of becoming a quasi world government with its posthuman agenda to micromanage our lives in the name of saving the planet." (page 211).

Many of Wilson's comments on beekeeping around the beginning of the 20th may seem like nostalgia. But he argues that it is more complex than that: it has orientated and liberated his own beekeeping. However, there are other topics which seem deeply nostalgic, for example his citing the gentler pace of TV programmes on nature and country crafts many decades ago, exemplified by Jack Hargreaves' presentations (see YouTube).

I conclude on a somewhat negative note, considering it only fair to point out something to potential readers contemplating spending £30 on the book: it is highly repetitive. Key phrases of certain topics are mentioned sometimes hundreds of times. Of course, not all such mentions repeat the same information, but sadly many do. In the normal run of things a copy editor would have brought the author's attention to this and together they would have quickly put it right.

Permapiculture, the Nicarao, the Japanese and the Ciociaro beehives

Alessandro Ardovini, Sweden

Part Two

The first part of this article was featured in NBH 27.

4. The construction of the Nicarao hive

Board cutting and assembly.

Boards are cut at a 60º angle.

The boards can be assembled in these two ways, as they all have the same dimensions.

Oscar Perone recommends assembling the hive using self-tapping screws, therefore it is better to use the second conformation. In the first one the angle on which the two boards are screwed together is very small and one of the boards could break, as can be seen in the second image.

Perone also recommends drilling a hole slightly larger than the screw in the board closest to the screw head. Thus, the tip of the screw will screw only into the board farthest from the head of the screw and it will pull it towards the previously holed board, where the screw moves freely, making everything more airtight.

Oscar Perone recommends making a mould of the same size and with the holes always in the same place so that all the boards will be the same.

Dimensions

The best dimensions for the Nicarao hive vary greatly depending on the area, the climate, the type of bees, etc.

As always, Perone, rather than imposing his ideas, learns from the bees. In this case he makes the bees choose which is the best size of the hive. He therefore proposes to create hives in four different sizes (preferably two or three hives for each size) and then observe which size has been most successful in the place where we have installed them. We can then proceed to create more hives of the size chosen by the bees.

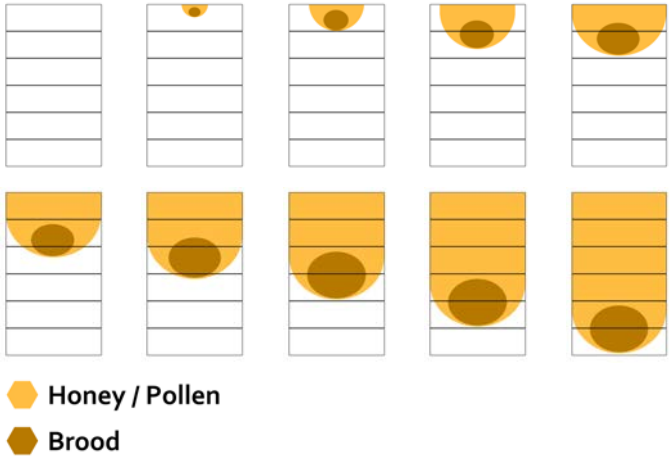
5. How the Nicarao beehive works

We place the bottom of the hive on bricks slightly above the ground and six boxes on it. Finally, we place the roof. We tighten them using a fabric belt so that animals can't knock the hive down.

Perone observed that bees don't have any special preferences regarding swarm traps installed up in the trees and so he proposes to trap the swarms directly into their final home.

When a wild swarm enters the hive it will start building from the roof, as happens in nature, and from there it will begin to grow downwards, building parallel honeycombs in a north-south direction, and towards the sides until it fills all the space.

The brood will always be in the form of a sphere at the bottom of the hives. When new bees are born, the cells are filled with honey and the queen goes on laying eggs in the new cells created by the younger bees below the old ones.



When the hive fills up, it's time for the first harvest. At night, with red light, we remove the roof, then we separate the three boxes just below the roof. To do so we use a metal wire to cut the roof and the uppermost box, and between the other boxes.

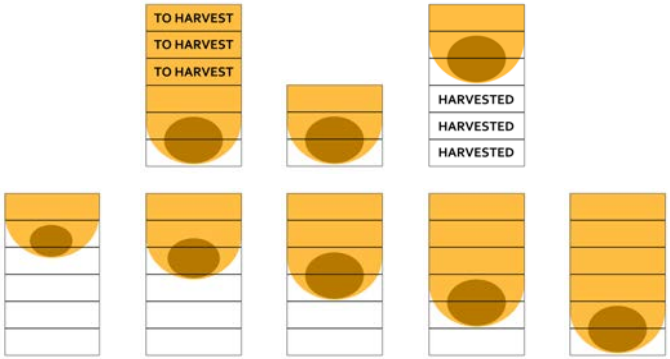
Immediately we put back the roof on and we leave the bees in the three lower crates for two or three days, during which we will extract the honey filled honeycombs in a hygienic laboratory.

After the extraction we go back to placing the boxes below those where the bees are.

If the season is favourable we will be able to collect a second time and perhaps even make a further collection of one or two boxes.

The important thing, however, is to leave the bees with the reserves they need to spend the winter.

It is better to leave more reserves of honey than we believe necessary than to leave too few.



As winter approaches, the bees will force the queen to stop laying eggs by filling the cells from which new bees are born with honey. Therefore, the size of the number of bees will drastically decrease and there will remain a very small number of bees that will protect and warm the queen, helped by the immense supply of honey that will act as a thermal mass, helping to maintain heat, as well as feeding the remaining bees.

6. Waterproofing beehives (from Oscar Perone's Permapiculture Manual)

The Japanese have been waterproofing wood for thousands of years, superficially burning the area that will be in contact with atmospheric agents, taking advantage of the fact that coal is rot-proof.

To do this, simply use a gas torch like this: In this way we will obtain maximum savings and effectiveness.

The simplest things are always the best, as Permapiculture demonstrates.

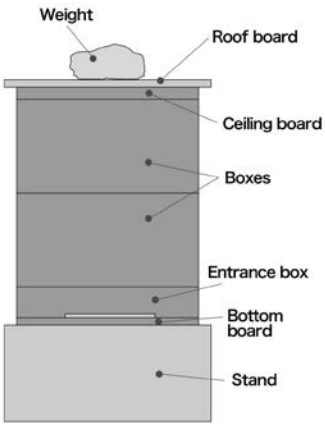
7. A bee suit that doesn't kill bees

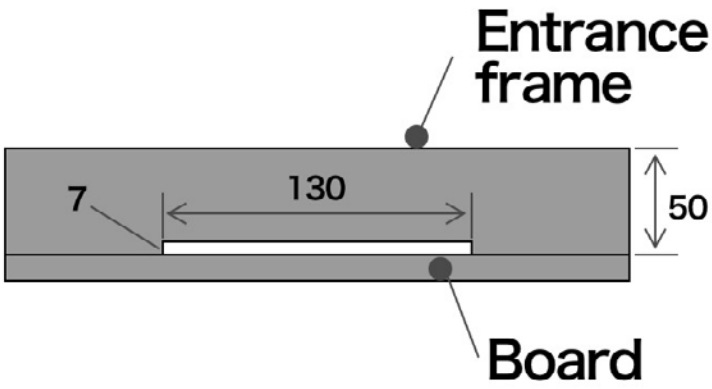
Perone observed that when going to collect honey, his suit ended up covered with stingers. He thought that was not an option because many bees died and it's also bad for the beekeeper's economy. He then thought about a type of suite that would not kill bees and it would also be good for ventilation for the beekeeper. The suit is composed of an internal layer of thin fabric, a middle layer of spongy material, thicker than the bees' stingers, and an external layer of mosquito net (which Perone could not find in white).

8. Personal experience with the Nicarao beehive

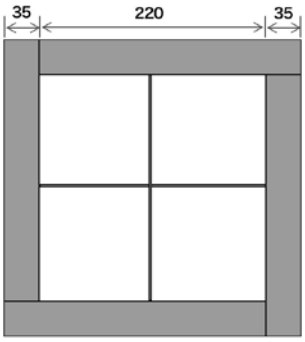
9. The traditional Japanese beehive

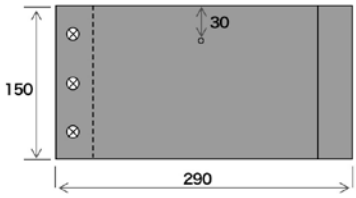
After building 3 Nicarao beehives (dimensions of the boards: 9,5cm x 19cm) I found a video of the traditional Japanese beehive, which works exactly like the Nicarao beehive. There are also videos explaining how to build one.

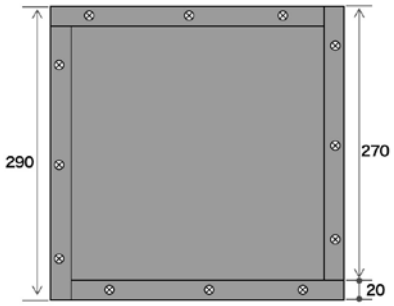


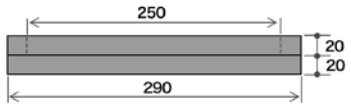


The construction process is simpler than the Nicarao beehive. However there are various metal parts that we don't want into the beehive since it might affect the electro-magnetic fields used by the bees. Merging the two designs, we then created the Ciociaro beehive. The name comes from Ciociaria the Italian region my colleague Pierluigi Anelli (on the left in the second picture of the building of the Nicarao beehive) and I are from.









10. The Ciociaro beehive
The 8mm wooden sticks are still missing from these photos. There will be two per each box, forming a cross and supporting the combs. We are still not sure if we'll use wooden sticks, like in the Nicarao beehive, or metal wire, like in the Japanese beehive, since the second is much cheaper. However, we won't use the metal sheet under the roof, nor the wooden net under this metal sheet.

After meeting with experienced alternative beekeeper Marcus Nilsson in Höör, Sweden, I think I won't burn the next beehives I make and I will leave them untreated, like he does. Also, I think I will just use small branches placed inside the boxes (from one corner to the opposite one) in order to support the combs.

11. Catching a wild swarm (from Oscar Perone's Permapiculture Manual)
[You should always work with wild swarms, since they are the natural way the bees have to reproduce. 30 million years of evolution know more about the way of the bees than one or two hundred years of western beekeeping. You should place empty beehives in the forest and wait for the bees to colonize them].

If you want your hive to be more attractive to swarms you can put on the floor of the nest you are preparing part of the remains left after the moths have destroyed the combs that have contained brood (they are their favourite to eat), this substance, full of debris left by moths, is irresistible to swarms, as they denote that there was a population of bees there.

12. Other ways of marketing (from Oscar Perone's Permapiculture Manual)
What I propose is to market your honey to the final consumer, in the honeycomb where your bees produced it, and to do this, divide those honeycombs into the smallest units you can, like that of a chocolate:

The honeycombs travel hermetically sealed in the vehicle. The boxes have been moved only to be collected and are put back in place.

When a hive is closed, the harvest is finished and it is not disturbed until the next one, which can be that same year if the conditions of the place and the season allow it, or the following year.

But the most important thing: only one trip is made where all the harvesting work is done.

The honeycombs are ground above the point where the honey will be racked, without the need for pumps or other movements.

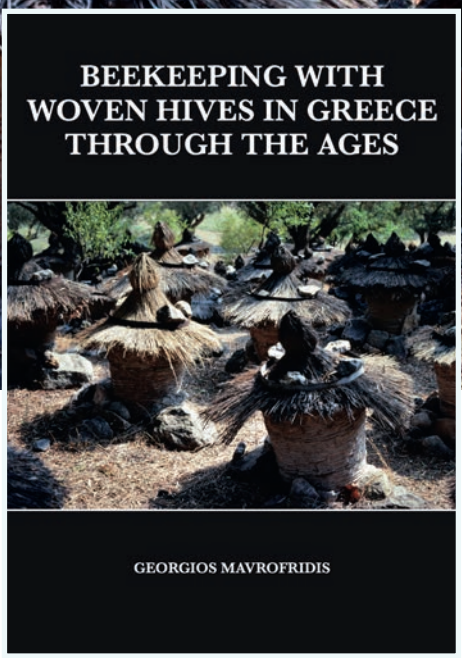
For this it is enough to use, for example, a manual meat grinder or, if the operation is larger, an electric meat grinder or a grape mill like those used in the wine industry.

The mixture of honey and wax that comes out of the meat grinder is deposited in a tank where natural decantation or separation can be carried out due to the difference in the specific weight of honey and wax, for which it is convenient to wait about fifteen days, after which the wax will be on top of the honey, and we can package it without further ado.

Beekeeping with Woven Hives in Greece Through the Ages

by Georgios Mavrofridis, Northern Bee Books, 1st Ed 2023

A publication that will be of interest and inspiration to skep makers, natural beekeepers, and those that follow beekeeping history and evolution. **Intriguing and informative photography throughout.**



This book is an original study on beekeeping. All types of Greek woven hives are explored, as well as the methods of practicing beekeeping by these means during the last centuries. Their construction techniques and the materials used, both by the beekeepers themselves and by professional basket weavers, are also recorded.

The proposed theses of the possible use of woven hives during the Bronze Age are examined, as well as all written sources concerning beekeeping with this sort of hive during Greco-Roman antiquity and the Middle Ages. The possible introduction of open-at-the-bottom wicker hives to the Greek region is also investigated.

Finally, the influence of a specific type of Greek woven hive, namely the open-at-the-top with movable combs, on the evolution of world beekeeping, both in the developed and the developing world, is examined.

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