

BIBBA

Monthly



In this months issue.

Presidents message for 2020

Articles

We're making a stand...

Varroa - We can't go on treating forever....

Bee improvement strategies - PART 1 (of 3)

March 2020

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Courtesy of Karl Colyer

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Welcome to BIBBA Monthly!

This month

Two themes present in all this month's articles are very encouraging for the future of native honeybees in Britain. One is the recognition of earlier efforts – e.g. those of Andrew Abrahams and Ron Hoskins – and building on their achievements to continue moving forward.

The other is the theme of selection, and striking a balance between natural and breeder-directed selection strategies. As Guy Thompson writes, referring to Jonathan Brookhouse's talk, "Pressures from many directions – pesticides, herbicides, over zealous hive inspection, the introduction of regionally unsuitable genes from imports – all make life very difficult for the 21st century honeybee." This month's authors all signal a shift away to some degree from highly intensive beekeeping in the direction of the "natural" beekeeping movement.

The News Brief includes a plea for someone to come forward as General Editor of BIBBA monthly. Vital parts of the job are "To collect material for publication or delegate different aspects of this to others", and "To develop the publications as necessary with ideas for regular contributions." If this can be achieved we will be able to fill an issue every month without fail with articles of this issue's quality.

Philip Denwood
Editor



Image courtesy
of
BeekeeperTom



Image courtesy of Karl Colyer

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Volunteer regional group coordinators needed.
If you can help please contact groups@bibba.com



"We will still rely on members for articles of interest and for a committed team to maintain the schedule"

Jo



NEWS BRIEF

Would you like to get more involved with BIBBA?

We are looking for new talent to join the BIBBA committee.

You do not need to be an expert beekeeper; there are ways that even a novice could help. Although the committee may meet face to face once or twice a year, usually coinciding with one of the major beekeeping events, there is no requirement to travel. Our discussions take place by email and by telephone conference committee meetings. Our current priorities are:

Secretary or Secretarial assistant to the chair.

We need someone who can:

- Take minutes of the meetings (or liaise with minutes taker)
- Record and prioritise tasks agreed at meetings
- Liaise with the Chair and Committee to produce meeting agendas

General Editor for 'BIBBA Monthly'(BM) and the 'BIBBA Annual'(BA).

We already have an Article Editor, a Layout Manager and a Website Editor and Manager

The tasks of the General Editor will be:

- To co-ordinate and oversee the production of BM and BA
- To ensure these are produced to current deadlines
- To collect material for publication or delegate different aspects of this to others
- To develop the publications as necessary with ideas for regular contributions

The purpose of the General Editor will be to oversee and delegate jobs where necessary. It is not meant to be an arduous position.

Why not put your name forward to become a trustee or just volunteer to give some help to the committee?

for an informal chat please contact:

Karl Colyer

or telephone 07968 623 131 any day, any time up to 7:30pm

Presidents Message for 2020

Author Jo Widdicombe (BIBBA President)

Image courtesy of
BeekeeperTom



It is not just a concern of BIBBA's; DEFRA recognise the increasing biosecurity risks that these imports pose and think the issue needs addressing. BIBBA are looking into how we can give extra incentive to beekeepers to choose home-reared, rather than imported or the progeny of imported. BIBBA is a minority organisation, our membership is a fraction of the number of beekeepers in the UK and Ireland, so we must find a way to reach out to members of other associations.

With the current views of many beekeepers seemingly more aligned to our views, of supporting home-reared stock rather than imported, now is a good time to move things forward.

In many ways it has been another good year for BIBBA with membership rising, regular communication with our members by email, through BIBBA Monthly, and our ideas being accepted by more of the beekeeping public. We hope to develop a mobile-friendly version of BIBBA Monthly, shortly, for those who like to read their emails in this way. For those who miss out on the electronic version, as well as those, including myself, who prefer 'hard copy', a publication will be put out annually with all the main articles included.

Unfortunately, this good news is unbalanced by the fact that imports of bees, mainly queens, are at an all-time high and are rising rapidly year-on-year. It is hard to reconcile the two opposing phenomena; I think some beekeepers, particularly some bee farmers, are using imports as an important part of their business. From a BIBBA point of view, with regards to bee-improvement, this is an issue that needs addressing urgently.

We are looking into the possibilities of a national bee improvement programme aimed at attracting the support of most beekeepers. This would be based on the best of what we have got and would aim to move our bees away from the uncontrolled hybridisation that is often the norm as a result of the constant supply of imported bees. Support for such a scheme could have a dramatic effect in reducing the demand for imports.



Image courtesy of
BeekeeperTom

Native, near-native, and local

BIBBA, by definition, is about native and near-native bees; we would expect them to



be the most suitable bees for our conditions as they have evolved here for thousands of years. It could be argued, though, that some species do well here even though they have not evolved here, such as various 'invasive' species. I believe the native bee is naturally the best survivor in our conditions and therefore is the best bee to select and improve. We know that working within a strain is the way to get consistency and make progress.

BIBBA must be relevant to all beekeepers and to recognise that our starting positions vary a lot. Whatever we are starting with, we all share a common problem with the import of exotic sub-species which, at best, bring some short-term relief to a beekeeper, but overall only make our situation worse, and bee improvement just that little bit more difficult to achieve.

The terms 'near-native' and 'local' are not well-defined, but perhaps it does not matter. We start where we start and must make the best of what we have got.

Without the influence of imports and with natural selection, as well as careful artificial selection, our bees can soon tend towards the native. Few of us are lucky enough to work with a pure strain and not have to worry about introgression from other sub-species; so, in a sense, we are all facing the same challenges. Those challenges could be considerably eased if we could reduce imports.

Jo Widdicombe



Beekeeper Tom and native bees at Heathrow with new students

We're Making a Stand

Author Dorian Pritchard (Dip. Gen. Ph.D)

Abstract

The existence of the honey bee (*Apis mellifera* spp.) is threatened in Britain, as throughout the Northern hemisphere. Ungoverned hive translocations and foreign imports have destroyed locally adapted native genomes, while pre-winter sugar feeding, *ad hoc* use of toxic chemicals, unnatural brood manipulations and winter insulation have destroyed the natural selection that created native bees that were virtually indomitable. The outcome is that now there is scarcely a honey bee colony in Europe that can survive indefinitely without human management. One of the greatest natural treasures evolution has gifted us is now close to extinction in its natural state! But we in Northumberland have seen enough of the damage wreaked both by misinformed and overconfident authorities and individual beekeepers, many of whom have never even seen a native British bee. We have decided to make a stand, and to set up conservation apiaries of true native British honey bees that will be run according to sensible scientific principles, while such bees (and such principles!) still exist.



Fig 1

Background

Northumberland, where I live, has a long history of beekeeping, including its earliest mention in Britain, in the form of a handwritten note penned on a sliver of birch wood in 410 AD by a beekeeper at Vindolanda, a fort beside Hadrian's Wall. It was an order for "*duo lini mellari*", two honey cloths, presumably for use as filters, to be brought from a supplier somewhere to the south. It was at Vindolanda that a lady beekeeping student of mine, an amateur archaeologist, dug up a little statuette of Priapus, the Roman god of fertility, instantly recognisable by his enormous erect penis! Statuettes of Priapus were mounted beside Roman apiaries to "protect them" — from infertility perhaps.

Then in the late 1700's, the wood engraver Thomas Bewick visually recorded the style of local straw skeps and mentioned using them. The inhabitants of Otterburn Tower and West Woodburn used skeps in their "bee bole" shelters in the 1890s, as there is historical mention of them in use at that time. Also, "*The lay of the Redesdale minstrel*" written by Robert Roxley in 1809, mentions the author's delight in quaffing milk and honey given him by his hospitable weaver friend, Jamie Mair on the "Mill-Haugh", the drying green beside Otterburn Woollen Mill.

Jamie's bees and those of Thomas Bewick must have been the native Northern Dark Bee, *Apis mellifera mellifera*, as foreign bees are thought not to have been imported

into Britain until the middle of the 19th Century. There is some disagreement whether the Romans used local bees in Britain, or brought their bees with them, but there were almost certainly bees in North Britain long before the Romans, in the Bronze Age, as evidenced by broken clay moulds used in lost-wax casting of bronze swords and axe heads at Jarlshof in Shetland. The Romans certainly did not introduce honey bees here, but they may well have introduced beekeeping!

Natural ranges

The natural range of the Northern Dark Bee extends right across Europe north of the Pyrenees and Alps, to the Ural Mountains, as far north as yew and hazel grow and hedgehogs roam, and throughout that

range July maximum temperatures average below 20°C. In Northumberland the July maximum is ~14°C, only 5° above the minimum of 9 at which our native bees are said to be able to mate (Cooper, 1986). In the hills local stocks typically swarm in July, and since mating conditions are unreliable, supersedure is common.

The natural geographical ranges of all the other honey bee subspecies are south of the Alps, where European summer maxima average over 20°. According to Heidinger and coworkers (2014) honey bee nuptial flights do not occur below 15°C and very few below 20. The subspecies they studied was not specified, but for a German research group, it would probably be *A.m.carnica*, a popular import in Germany and the hardiest of the

subspecies imported into Britain. Their need for higher flight temperatures is one of several reasons why exotic bees rarely survive as ferals in the North. Nevertheless, some ambitious beekeepers import Mediterranean stocks here and although they typically cannot keep their stock beyond the lives of the imported queens, on warm days their drones are sufficiently active to mate and infiltrate the native genome. This however, is not at all a good thing as their genes undermine the life-preserving adaptations it took our locally adapted bees at least the 10,000 years since the Ice Age to evolve, and probably a very great deal longer. Even one episode of inter-subspecies crossbreeding can put an end to all attempts at bee improvement by breeding, for several generations.

Fig 2



The historical perspective

When I started beekeeping in Northumberland 40 years ago, the widespread belief was that in an average year virtually every well managed colony should survive without medication of any kind. Another dictum was that if you take your bees to the local crops and heather moors, they should only need feeding up for winter if the preceding summer was atypically poor. I still manage my bees on that principle, though now I generally feed them well before winter, as I am trying to keep several queen lines alive for breeding. At this stage I don't want losses.

The current picture

Destruction of native genomes is occurring all across Europe, as indicated by the COLOSS (2014) survey. The authors of that report analysed survival rates for locally adapted native honey bees, along with two foreign subspecies, at each of 21 apiaries in 11 European countries: 621 colonies in all. A condition of the study was that all medication was to be denied them. The COLOSS report stressed the superior endurance of local stocks over imported bees *in every one* of those apiaries sampled and this dramatic finding persuaded the participants in that study to redirect their attention away from commercial stocks, toward native bees. Strangely though, despite making that very significant finding, they seem to have overlooked what I consider the even more devastating conclusion that *almost none of even the locally adapted colonies could survive for as long as two years without medication!!* If the test apiaries were selected as truly representative of their regions (and I have no reason to consider otherwise) it means *there is now scarcely an apiary in mainland Europe, native or non-native, where honey bees can survive indefinitely without human aid!*

So, something terrible is happening to Europe's honey bees! It started during my time as a beekeeper, but we in

Northumberland, like our bees, are now making a stand. In collaboration with the Revitalising Redesdale Landscape Partnership Community Heritage Fund, we are setting up three new conservation apiaries in Redesdale, with varroa resistant local *A. m. mellifera* as breeding stock. We want our beekeeping and non-beekeeping neighbours to be aware of this initiative and to be involved peripherally, so our breeding programme will go along with a programme of bee-related activities to which members of the public are invited. This will include lectures and demonstrations, bee-wing morphometry sessions, hive building, queen rearing and all aspects of general beekeeping.

We are working collaboratively with the Northumberland Wildlife Trust and local gardening and wildflower conservation groups, as well as sympathetic landowners, on whom we will depend to alert us to foreign hives being brought into the area.



Varroa resistance

My bees are virtually completely resistant to varroa and have been for some 18 years! This is because I withdrew treatment, allowing reinstatement of natural selection. I have not treated them or carried out any anti-varroa manipulations since 2002 and, as I thought they would, they took advantage of their freedom to develop their own means of defence. One they apply at every brood break and another during brood rearing, when the mites also try to reproduce.

During extended brood breaks, if there are live mites in the hive, they are perforce all adults, doing their best to survive in the phoretic state, subsisting on the fat bodies of adult bees. In that exposed situation it is easy for experienced adult worker bees to dislodge and kill mites by biting them. Bees that carry out this kind of hygienic behaviour are called “allogroomers”.

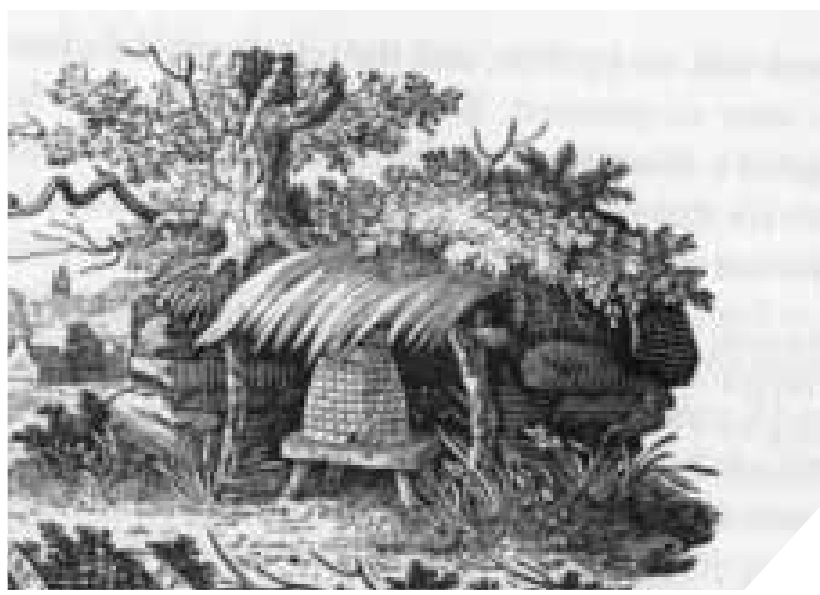
The trick when the mites are reproducing seems to be non-emergence of infested bee pupae, a kamikaze tactic that means the death of the host bee, but also that of its predators, as the latter cannot escape unless their host is sufficiently fit to chew its way out. Tests on young adult workers indicate that *A.m.m.* finds the presence of mites particularly discomfoting (see Pritchard, 2018). This proven policy of varroa control involving restraint from intervention by the handler, will be followed also in the conservation apiaries.

Social issues

There are around 20 beekeepers in the Redesdale Beekeeping Group, many of whom acquired their skills at a beekeeping class run by ourselves for 16 years at Kirkley Hall Agricultural College, Ponteland, now part of the University of Sunderland. Our first application to the RRLPC Heritage Fund earned us a maximum award of £2000, to fund ground work and fence building at the first apiary site, on Forestry Commission land, and the purchase of a few hives, both timber and expanded polystyrene. Comparison of colony performance in the two types of hive in Northumberland’s austere upland environment will be an ongoing research project.

Strategy and tactics

We take inspiration from the Irish Galtee Bee Breeding Group, bearing in mind the topographical advantages of the Dun Aengus Bronze Age fort plan in the Aran



Islands of County Galway, with its concentric defensive ramparts and back to a sheer sea cliff. Our equivalent of the cliff is Carter Bar, the high ridge that here marks the Scottish Border, which should provide an obstacle to unselected drones encroaching from Lowland Scotland. Access from east and west is defended by the southerly outliers of Cheviot.

Our strategy for mating is based on Andrew Abrahams’ on Colonsay. Each of the three conservation apiaries will contain colonies of a different queen line where production of an abundance of drones will be stimulated by use of additional drone foundation, while virgin queens will be taken temporarily to one of the other apiaries for mating. Drone flooding will be especially important at the south end of the Dale, to counteract unselected drones entering the valley.

The “Roger Patterson management plan” will be followed at each apiary, one in five hives being used to service the other four. Over time we anticipate there will be more apiaries in the Dale, as well as more feral colonies.

Our breeding stock

We already recognise seven putative local queen lines, with excellent wing morphometry (Dews’ plot) scores (see Figs 3a,b). Mean values for 30 right wings per colony are shown as black spots. The overall means of means, indicated by the larger open circle, are Cubital Index: 1.75,

Discoidal Shift: -2.35, well within the bounds for native British *A. m. mellifera* (see Ruttner ;1988; Ruttner, Milner, Dews, 1990). One of the author's native foragers is illustrated in Fig. 2. These colonies will probably be among those used to found the conserved breeding population, depending on the outcome of DNA testing.

DNA testing

To ensure our bees are genuine natives, we are having their DNA characterised by Dylan Elen, President of the Belgian Dark Bee Conservation Group (“Zwarte Bij”) and now a postgraduate research student at the University of Bangor, working with Dr Paul Cross. Dylan extracted their DNA in Spain and has now taken it to Portugal for analysis. This will be using “Single Nucleotide Polymorphisms”, or SNPs (pronounced “snips”), at Prof. Alice Pinto’s laboratory. Alice leads the best bee DNA analytical team there is.

The SNP approach involves using small pieces of DNA (“DNA probes”) corresponding to single-base variants in the bees’ DNA. I am not party to the details of the analysis, but one way it could progress is to label the probes with coloured dyes that fluoresce brightly under appropriate lighting conditions. For example, all those probes that match M-lineage (i.e. *A.m.m*) variants might be dyed green, while all those corresponding to the C-lineage (i.e. *A. m. carnica*, *ligustica*, *caucasica*, etc.) might be dyed red. If a mix of both red and green probes is incubated with fragments of DNA from a bee, an *A.m.m.* sample should bind only green probes, while *carnica*, for example, would bind only red. A bee that is basically *mellifera*, but with 10% genomic contamination by *carnica*, would bind 90% green and 10% red, and so on. Our aim is to identify colonies that are entirely, or almost entirely of M-lineage, i.e. the DNA of which would fluoresce entirely, or largely green.

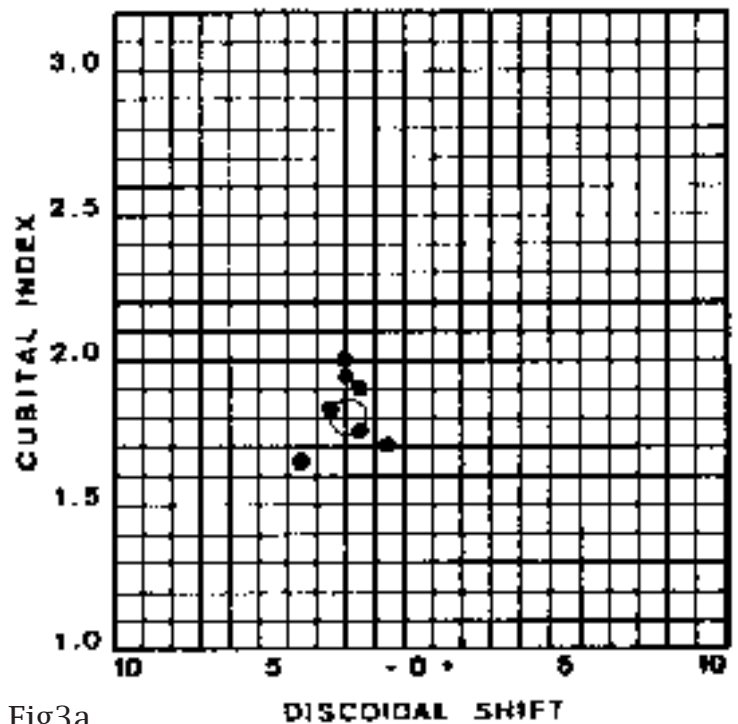
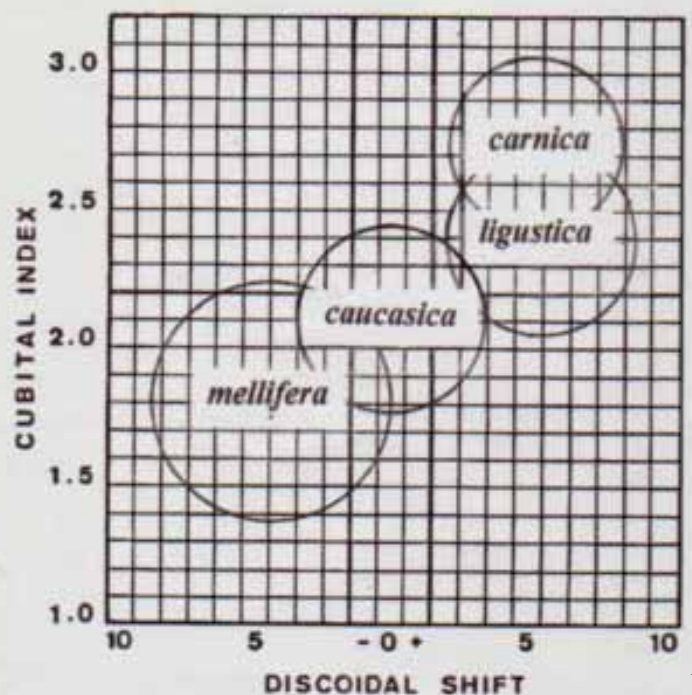


Fig3a

Dylan will be looking at two kinds of DNA, chromosomal and mitochondrial (mtDNA). Chromosomal DNA is a major component of the chromosomes and occurs in the nucleus of every body cell. It provides instructions for bees’ anatomy, physiology and behaviour, etc. Female bees acquire it from both sperm and ova, so it is inherited from both parents, but, since drones develop from unfertilised eggs, their chromosomal DNA is derived entirely from their mother. Mt DNA accounts predominantly for energy generation and since it is inherited in both

Fig 3b



sexes only from the mother, it can be used as a marker for ancestral queen lines.

In theory the SNP approach can be applied to both chromosomal and mitochondrial DNA, but since there is a deficiency of knowledge about British mtDNA, in our case an alternative approach will be used. This is to deduce the base sequence of a short stretch of the DNA in each sample. Those sequences will then be compared and the similarities and differences used as queen line markers.

Our grant does not stretch to DNA testing, so for this we rely on the enthusiasm and generosity of our members, some of whom are redirecting personal income, selling craft goods and cashing odd investments to support the initiative.

A Dark Bee Haven

It is vital to get Redesdale recognised as an official haven for the native Northumbrian honey bee, before its genome becomes hopelessly compromised. This has been done for Colonsay and Oronsay, but it took Andrew Abrahams many years' struggle, and exploitation of a legal loophole that applies only in Scotland. Our colleagues in Cornwall are making important moves towards protecting their native bee (see recent issues of *Bee Improvement and Conservation* and *BIBBA Monthly*); we hope for similar success in following their noteworthy example.

We hope establishment of a closed community of DNA-authenticated native *A.m.mellifera* and its protection by whatever means are legally possible, will save at least some representatives of one of our greatest natural treasures, appropriately in the region where beekeeping may have begun in this country.

Dorian Pritchard
Dip. Gen., Ph.D.

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Figures

Fig. 1. Aerial perspective of Dun Aengus, a Bronze Age fort in the Aran Islands, Co. Galway. This was the conceptual model for Micheál MacGiolla Coda's conservation strategy in the Galtee Hills of Cos Cork, Limerick and Tipperary.

Fig. 2. One of the author's native *A. m. mellifera* foragers on Common Dandelion, *Taraxacum officinale*.

Fig. 3a. Plots of Cubital Index against Discoidal Shift for samples of seven Northumberland queen lines. Mean values are indicated. These plots are all highly indicative of native British *A. m. mellifera* status.

3b. Comparative wing morphometry data of the main *A. m.* subspecies commonly found in Britain. Mean values and ranges are from Ruttner (1988) and Ruttner, Milner and Dews (1990).

Varroa - We can't go on treating forever...?

Author Guy Thompson BIBBA Trustee

Jonathan Brookhouse of Two Brooks Bees in Surrey gave a winter talk at the Wisborough Green Association on 29th January 2020. His subject was the wider aspects of varroa treatment with the view that “We can't go on treating honeybees for varroa forever, so why not stop treating right now?” He wanted this simple message to be the one we all took home, but the question does not have a straightforward answer.

A beekeeper of over 40 years standing, Jonathan stopped treating all his bees - some 50 colonies - in 2013 and, although we

- the bees will remain just as vulnerable as they were upon the arrival of varroa three



were not told the percentage that failed (“quite a lot”), he readily admitted that the loss levels were hard to swallow, particularly in the first season. The lack of record keeping in those early years looks like a missed opportunity given that he believes that his bees have now developed some tolerance of - and resilience to - the mites.

It is widely accepted that as long as we artificially control the varroa mites in our hives, there is no selection pressure at work and so mite resistance cannot evolve

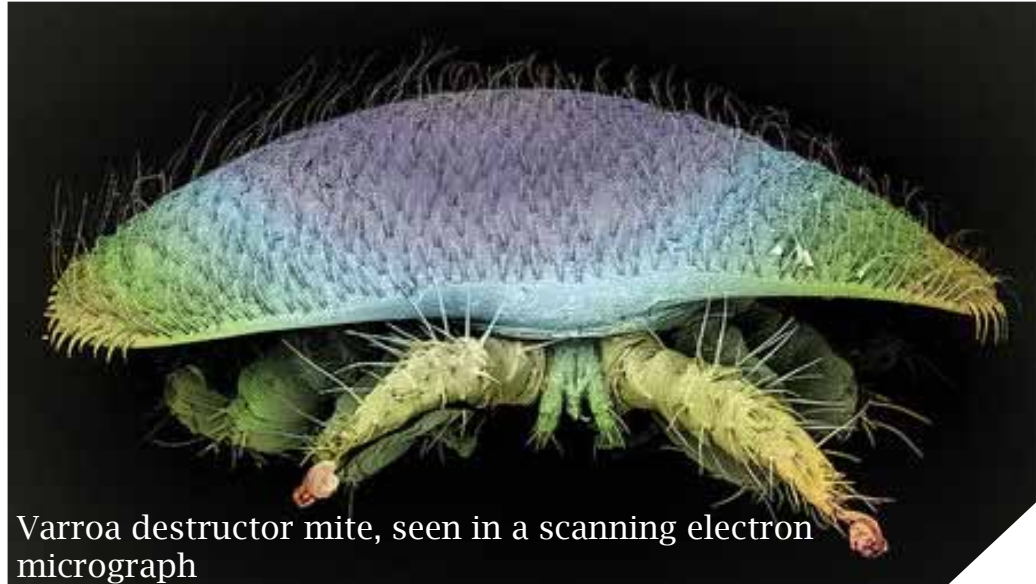
decades ago. Indeed, as Jonathan pointed out, the chemical treatment itself leads to yet another layer of pressure on the bees and it is unknown to what extent the spread of diseases such as deformed wing virus (DWW) are a direct result of mite infestation or a secondary effect resulting from the physiological effects of the chemical treatments. Pressures from many directions - pesticides, herbicides, over zealous hive inspection, the introduction of regionally unsuitable genes from imports - all make life very difficult for the 21st century honeybee. Missing from the talk, however, was the idea that - regardless of treatment or non-treatment - there is a great deal the beekeeper can do to improve the outlook for their colonies. Jonathan suggested that there may be a natural balance between the bees and the mites, and that it is not in the interest of the varroa mites to completely kill a colony, as it would also result in their own demise. But, it has to be asked, when there is another host colony less than ½ a metre away, then why not? The downside of killing your host is reduced and life is

made much easier for the varroa mite (and for all sorts of viruses) in a crowded apiary, with frames and equipment regularly transferred around the hives: hitching a ride out of a failing colony to a new home is not difficult in this situation. But if it's varroa heaven then surely it is also honeybee hell. Although not mentioned, apiary design and hive management practices ought to be a significant consideration in mite control.

In the period since he stopped treating, Jonathan has actively sought to improve his bees selection of a small number of desirable traits in the survivor colonies, and breeding from that stock. Once again, the lack of hard numbers was a little disappointing: the reduction in colony failure rates that Jonathan has seen as he has improved his bees would have been compelling information to set alongside the detailed hive inspection logs he keeps. In an early Spring inspection, Jonathan looks at four main attributes for use in breeding selection: these are survival, gentleness, evidence of varroa hygiene, and "blackness", by which he means a raised level of native bee (*Apis mellifera mellifera*) genes. I got the impression that, when he started, the survivorship hurdle was set low: just one winter, given that his losses

were so high. Nowadays his definition of colony survival means 3 seasons or more and, with that under their belt, he deems the colony's queen suitable for queen or drone breeding.

“Gentleness” is a trait desired by beekeepers for obvious reasons, but there was no examination of whether this trait is compatible with, say, varroa



Varroa destructor mite, seen in a scanning electron micrograph

resilience ... maybe aggressive bees are better at dealing with mites? Who knows, but the more traits you chose, the more likely a clash of this sort.

On the other two factors Jonathan is much more subjective: varroa counts are not taken, he does not test for hygienic behaviour (except by observation), and the genetics are not assessed by morphometry or DNA testing so essentially he bases his selection - apart from “survivorship” - just on visual inspection.

His queens are open mated and so, although drones are bred in specific hives at his apiary, there is not the genetic control that instrumental insemination could bring to his breeding operation. This will undoubtedly slow down the rate of improvement of his bees, but has the advantage of reducing the potential for genetic bottlenecks as outside genes are regularly introduced. On





Ron Hoskins

though, the genetic coding for the traits he has selected will increase in frequency in his colonies whilst others will reduce. And as Darwin observed, it is possible to see and record natural changes or adaptations without understanding what is causing them. The example of Ron Hoskins' work at the Swindon Honeybee Conservation Group was raised in the talk. He originally believed that mite grooming was the characteristic that allowed his bees to thrive, but it was later shown that a specific, non-lethal form of DWV - type B - is prevalent amongst his "superbees" and this is acting to suppress the lethal form of the virus through a process called superinfection exclusion, allowing the bees to survive. The point here is that, although Hoskins' original hypothesis was not proven (and still isn't), it didn't matter: from a bee improvement point of view, the traits that he had selected, just as Jonathan has found, were sufficiently targeted to provide the gains in quality he needed. What would be interesting to know is what scale of apiary is needed for localised bee improvements to spill into the nearby bee population and start crowding out "undesirable" traits: does it take a large apiary to have an effect? Is action at the single hive scale worthwhile? Jonathan is actively trying to persuade nearby beekeepers to 'go native' and improve their bee quality, in order to amplify his own efforts.

Aworry, of course, is that by selecting too many desirable traits for breeding,

the beekeeper not only inadvertently increases the potential for clashes, as mentioned above, but that he also starts breeding out other, beneficial or even essential traits. The negative results of such targeted inbreeding is familiar in the canine world. By keeping the number of selected traits low - ideally just one - the process remains inclusive, because all the genes of all the survivors remain in the loop. It is therefore possible to maintain genetic diversity at the same time as breeding bees better adapted to the varroa mite. The great thing about Jonathan's method, of course, is that his bees have not just survived varroa: they have survived everything.

Where does this leave the hobby beekeeper or, indeed, the bee farmer in trying to decide a route forward on varroa? All the evidence shows that, for now at least, if you go the non-treatment route you will suffer very substantial early losses. If you only have a couple of hives this might be your whole stock: if you are a bee farmer then the cost and effort of treatment will seem small compared to the income loss that will almost certainly arise from going the non-treatment route. But, as the work Jonathan Brookhouse clearly shows, there is something very positive every beekeeper can do regardless of varroa treatment: ensure that the source of your bees is always strong, local, survivor stock. That way, whenever the genetics of your bees spread into the wider population - which they will be, via your drones or swarming, or small scale bee breeding - you and they are contributing to an improvement in the quality of the honey bees in your area.

Guy Thompson

For those interested in contacting Jonathan his highly recommended website is <https://www.twobrooksbees.co.uk> where his details can be found.

Helping bees live with Varroa

24th May 2020 – Ettington Community Centre, Warwickshire CV37 7SX

9.30am for 10am start. We aim to finish around 4.30pm

Summary

Since varroa was discovered in the UK in 1992 many approaches have been adopted to minimise the effect of the parasite and its devastating impact on our bees and the craft. Recent discoveries recognise that some bees may be developing their own mechanisms to deal with the mite. It therefore makes sense to raise queens from colonies that are showing this trait and to replace queens in colonies that aren't.

This event has been organised to help beekeepers understand how bees are dealing with varroa themselves so that we can reduce our reliance on chemicals and practices that may be hindering this development. Participants will learn from experienced beekeepers who have used non-chemical methods for varroa management. In addition, understanding the latest scientific standpoint will help us explore future options to improve and manage our bees to live with the pest.

Who is the day for?

All beekeepers will gain from attending. We aim to provide useful information for individual beekeepers from beginners to bee farmers. It will also interest BKA Officials, Teachers and Apiary Managers. There is no minimum level of beekeeping knowledge required, as the speakers will discuss their personal experiences and what they have learnt along the way.

The Programme

Presentations will be given by several speakers, including experienced beekeepers and scientists. The beekeepers come from throughout the U.K., so have kept their bees in different environmental conditions.

What it will and will not be about.

The emphasis is on beekeepers helping bees develop their own ways of living with varroa, by reducing or eliminating the continual use of chemicals that are hampering the progress of bees to survive with reduced treatment. It will be for responsible beekeepers, not those who simply abandon bees. The event will not be advocating any form of treatment. It is purely to give experiences and learning from past efforts. Attendees can then decide their future approach to varroa management.

Only £9 per person.

Limited spaces are available so book via www.bibba.com/events

Refreshments will be provided on the day but please bring your own lunch.

www.bibba.com

Disclaimer

BIBBA does not recommend or support any specific method of varroa control but it does support the aim of helping the bees to live with varroa. It is up to the individual beekeeper what methods, if any, they use. Any opinions given by any presenter are those of the presenter and not necessarily those of BIBBA.

Bee Improvement Strategies - Part one

Author Kevin Thorn BIBBA Groups Co-ordinator / Trustee

Bee Improvement Strategies – Part one

A key question any individual or group should consider is, what method should I/we follow to improve our bees and to produce queens? There are a few key choices depending on your aims, capacity (time and equipment) and capabilities. I'm assuming the reader is looking for a bee that is native and/or locally adapted.

The first thing for a new beekeeper to understand is that honey bee mating biology is very different from that of mammals, and breeding "pedigree" queens is hard when in nature they fly three+ miles to mate with up to 35 males from random hives (sources differ on these numbers). So, if controlling the male line is so difficult what can I do?

Simple Bee Improvement – controlling the female line.

Anyone who has had the opportunity of hearing Roger Patterson speak at his "Bee Improvement for All" days will know that

there is a lot you can achieve with a small number of hives (as few as two), and either on your own, or with a few likeminded beekeepers.

Image courtesy of Kevin Thorn



Starting Stock

There is a general belief that it is best to start with a pure strain of bee and so buying in *A.m.m.* queen(s) is often favoured. Selecting and propagating within a pure strain gives more reliability and offspring more closely resembling their parents, but usually little thought is given to how this strain can be maintained. Inevitably, it may be almost impossible to keep them pure and you will need to buy in new stock regularly just to keep them going.

An alternative to buying in queens is to start with a frame of eggs from a good hive (or a bar of grafted larvae, if you have someone capable of doing this) and put this in a queenless



Image courtesy of Kevin Thorn

colony. The bees will produce queen cells. The same problem will need to be faced: how to keep the strain going.

Another way of approaching bee improvement is to start with local stock, perhaps your own, collected from swarms, your BKA or from a local beekeeper with a good reputation. This has the advantage of using stock that is already developing some local adaptation. If imports or offspring of recently imported stock are avoided, this can give good results. The beekeeper, through careful selection, can witness a steady improvement in stock and a tendency for stock to tend towards native over time.

Perhaps the occasional purchase of *A.m.m.* queens in this situation will help to consolidate the strain and make progress more rapid.

Assessment of stock

Roger's recommendation is to simply split your colonies into two groups, roughly half and half, and propagate queens from your best-half colonies when opportunity presents — e.g. swarming — and replace your poor-half queens with the queens you produce. Deciding which are your better colonies can be as simple as which do you enjoy handling the most and which the least?

Use few selection criteria — most agree that temper is the most important, and the great news is that this has been found to be one of the most heritable traits of honeybees, so you can see improvement very quickly. The ideal stocks to propagate from are those that largely ignore the beekeeper when opened and where the queen carries on laying even when the frame she is on is removed from the hive.

The key to improving your stock in addition to propagating from your best is culling the worst. The more you are prepared to replace, the quicker the progress you will make.

Propagating queens

Take the opportunities the bees present. If a colony is trying to swarm — if it's a good colony you can split as the books recommend, if it is a poor colony you need to find the queen and destroy her — don't be tempted to make up a nuc or let the bees raise a new queen from their own stock.

Destroy any queen cells, wait seven days and destroy any more they produce. They are now hopelessly queenless and you can give them a frame of eggs from one of your best colonies — remember to reduce the queen cells to one or they may still swarm!

Simple queen propagation: there's no need to worry initially about complex methods of queen rearing (unless you want to). Simple splits can raise a lot of queens. When I first became a commercial beekeeper, I had only six colonies but by



splitting each of these, I had 32 by the end of the season (not much honey though)! The best method for splitting is to find the queen and make up a nuc with her (frame of brood, shake two frames of bees in if staying in same apiary, frame of food and make up with spare empty comb or foundation, feed next day.) The bees in the now queenless colony will create emergency queen cells on the comb. Each frame which has a queen cell can potentially now be a nucleus colony for the queen cell to emerge and mate.

Even if you can't find the queen you can simply split a colony into two, the one without the queen will produce queen cells that can be used. Not necessarily the ideal method but it is the simplest. Remember to reduce the queen cells to one.

Propagating Drones

It is always a good idea to produce drones, for even though these are unlikely to mate with your queens, they will mate with your neighbour's queens and you may influence their bees and get better stock in your area. I find colonies given drone foundation use it and tend not to build drone comb elsewhere which keeps your comb tidy (although one of my colonies builds three frames of drone comb regardless!). Just put one frame of drone foundation, one in from the outside frame or in your best colonies two frames — one in from either end.

Introducing Queens

Simple queen introduction: rather than picking a queen off the frame and putting her in a cage, with or without attendants, it is far simpler to use the newspaper method to combine a queenless colony with a nucleus with a newly mated queen and the success rate is pretty much 100%. Top tip for newer beekeepers is to always check your queenless colony is definitely

queenless by giving a test frame of eggs. If they draw queen cells it's queenless. Many good queens are lost by introducing to a colony that already has a queen.

Equipment needed

Other than a couple of extra nucs,



Image courtesy of Kevin Thorn

depending on your ambition, you should be able to use your existing equipment so additional costs should be minimal.

All of the above are accessible to all beekeepers of any level of knowledge and experience (except an absolute beginner of course). When you have mastered the simple techniques above you may wish to try some more advanced techniques which I will cover in parts two and three.

Kevin Thorn
Trustee and Group Coordinator

In Memoriam

Lester Wickham

Beowulf Cooper, was the founder of what is now B.I.B.B.A but originally call The Village Bee Breeders Association in 1964, and he would suss out any beekeeper whom he met and if he formed an appreciation of their talents and abilities would get them onto the Committee.

Having bought four colonies of fearsome bees, I was seeking a solution or advice and a visit to Beowulf was suggested. I went down to Thulston, Derbyshire to meet him and found myself on the committee.

It was at the first committee meeting in 1966 that I attended and met Lester, he was Treasurer at the time, a post that he held for over 10 years. He always had a smile and appeared to be ponderous in his speech, a diversion, as I found out, as he took things slowly, whilst working out a strategy or a response to a point. With both of us having a Quantity Surveying back ground, we had an immediate rapport and became good friends. Sometime later, Beo found Tom Robinson from York and the three of us became a trio of tykes.

Lester appreciated what Beowulf was proposing and he and a friend started a queen rearing project in the heights above Holme Firth, long before Compo, Cleggy and Norah Batty entered our lives.

The strong winds over the Pennines proved too much for successful queen mating so they retrenched into the Holme Valley and went for honey, whilst ridding their colonies of bad tempered bees. In his 60's, Lester had major Heart Bypass surgery, which made him refuse to physically hurry along. He was happy to walk behind Tom and I so long as he did not strain his heart. After leaving the Committee we kept in touch with the annual Christmas Card. He died aged 86, still making plans for the coming season. He leaves his wife Trish and step children.

David Allen 20.02.2020

Lester was a close BIBBA friend of mine during the early 'build up' years. We were regular northern representatives on the BIBBA Committee. Lester kindly hosted me overnight as I travelled from Durham to his house in Yorkshire and we travelled together to Beo Cooper's house in Derbyshire.

After Beo's untimely death he was one of a small dedicated group who decided to continue with BIBBA.

Lester served as Treasurer and worked hard to build up membership as we held committee meetings in a variety of places that meant a lot of travelling.
Best wishes to all

Ken Ibbotson

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