

THE MODERN TOP BAR HIVE EXPLAINED:

a simple, sustainable approach to small-scale beekeeping

Like so many British beekeeping novices, I began with a double-walled 'WBC' hive – the kind with sloped-sided outer boxes enclosing the brood chamber and supers. Soon, I acquired a couple more and began to realize that, if I was to continue along this road, I would have to build myself a big shed in which to house all the spare woodwork and other paraphernalia that was rapidly accumulating – and I would have to find a way to pay for all the 'extras' I would soon be needing.

At this point I asked myself, “Does it really need to be this way?” And that innocent question led me on an exploratory mission of reading, study and experimentation that showed me conclusively that, no – it does not need to be that way: beekeeping does not need to be complicated, expensive or dependent on machine-made parts and equipment.

My search for an alternative approach led me to the top bar hive - one of the oldest and simplest types of beehive - that requires little skill and few tools to build. A good start on the road to simplicity, but is it a practical hive for modern beekeeping?

After some years of experimenting and testing various designs, I believe I now have a top bar hive design that is practical and productive, while being comfortable and easy to use for both the bees and the beekeeper.

So what are top bar hives? The principle is simple: a box with sticks across the top, to which bees attach their comb. Mine have low, central, side entrances, sloping sides and a pair of follower boards to enclose the colony. There are many variations on this theme and all have the essential guiding principle of simplicity of construction and of management. There are no frames, no queen excluders, no ekes, no mouse guards, no supers, no foundation and there is no need for extractors, settling tanks, filters, de-capping knives... in fact no need for any other equipment or storage space, other than that provided within the hive itself. And if you have just spent an hour leafing through suppliers' catalogues, wondering how you can possibly afford to keep bees, that will come as some relief!

Top bar beekeeping really is 'beekeeping for everyone' – including people with disabilities, bad backs, or a reluctance to lift heavy boxes: there is no heavy lifting once your hives are in place, as honey is harvested one comb at a time.

From the bees' point of view, top bar hives offer weatherproof shelter, the opportunity to build comb to their own design – without the constraints of man-made wax foundation – and minimal disturbance, thanks to a 'leave well alone' style of management.

So what is wrong with framed hives and why should we consider such a radical alternative?

Broadly, there are two possible reasons why something as functional as a beehive should remain virtually unchanged for 150 years, while all around us the engineered world has, in almost every other respect, changed utterly. Either it is perfectly suited to the job, or its use has become so ingrained in habit and

tradition that nobody has bothered to question whether or how it could be improved. In this case, I think a little of both applies: in some ways, the box-and-frame hive is reasonably well-suited to the job – at least from the beekeeper's point of view. It is a simple matter to lift individual frames out of the hive to see what the bees are doing and - if you are fit and have a strong back - it is relatively easy to remove the honey crop.

From the point of view of the bees, however, it has a number of disadvantages:

- The frames are rectangular, usually wider than they are high, while bees naturally build comb in deep, catenary curves, taller than they are wide.
- The use of pre-formed, worker-cell size foundation forces bees to build comb according to our requirements, not theirs¹. They prefer to adjust the size of their worker cells according to season and build drone cells according to how many males they choose to raise.
- They like to build queen cells around the edges of their comb, which is difficult if foundation wax covers the full width and depth of the frame.
- They prefer to space their honey storage combs slightly wider apart than their brood frames, which is impossible if all frames are equally spaced.
- They prefer to live in cavities with plenty of space below their combs, while modern hives have only a small space – often as little as a single bee-space - between the bottoms of the frames and the floor.
- And the very feature that make this arrangement most suitable for beekeepers – the fact that frames are movable and removable – spells disaster for bees if their caretaker chooses – as too many do - to re-arrange their nest according to his whim, careless or ignorant of the needs of the bees.

In fact, most hives are also less than ideal for beekeepers:

- When the lid and inner cover are removed, the whole colony is exposed at once, causing a sudden temperature drop and an instant, mass protest. The beekeeper tries to silence this revolt by applying liberal doses of smoke, which, as often as not, aggravates the bees rather than subduing them, with painful and disruptive consequences.
- Frames are made to precise dimensions, which means that they must be purchased - at no small cost - from manufacturers equipped with expensive, precision machinery and laboriously assembled with hammer and pins. They are easily damaged by rough handling and are difficult to clean thoroughly.
- Foundation wax also has to be bought in - as precision mills cost a king's ransom – and fitted carefully into the frames with more pins and fine, zig-zag wire reinforcement, close to which bees often refuse to build comb.
- The wax used for making foundation will contain a random mix of all the lipophilic substances that previous beekeepers have chosen to apply, as it

¹ A couple of years ago, I took some measurements from a conventional hive, and found that the brood foundation we currently use is about 5.65 mm, while a piece of 'free' comb (comb that had been built in a space inadvertently left by a bee-keeper) was between 4.9 and 5.1 mm across the flats of each cell. This must suggest that the bees have their own ideas about cell size.

is bought in by the millers from whoever cares to sell it to them. This may include sources that are less than scrupulous about the chemicals and medications they use.

- Then, when it comes to harvest time, we have the problem of weight. A full super of honey can weigh between thirty and sixty pounds, depending on the type of hive and number of frames. Not surprisingly, hernias and chronic back pain are commonplace among commercial beekeepers and many people, especially women, are put off even hobby-scale beekeeping by this consideration alone.

How is it then, after one and a half centuries of 'modern' beekeeping, we are still using equipment that has so many obvious drawbacks?

The truth is that many attempts have been made to 'improve' the design of beehives, but in almost every case they have taken one feature as given and unalterable – the holy frame – and along with it, the use of wax foundation.

While the invention of the movable frame is commonly regarded as the greatest ever single step forward in beekeeping, it also locked into the minds of the Victorian beekeeper the notion that it was desirable – even necessary – to bend the behavior of the honeybee to the will of man; to force this wild creature to work according to the conditions they chose to impose upon it, rather than let it do things in its own particular and variable manner. This one step, I believe, sealed the fate of the bee, which has done its best ever since to adapt to this imposed regime only because we have given it no real choice. Since frames and foundation have been the unquestioned, dominant paradigm in beekeeping, perpetuated by beekeepers throughout the western world, the health of bees has steadily declined to the point where they are now in real trouble.

Top bar beekeeping is about as simple as beekeeping can get, while maintaining provision for occasional inspections, comfortable over-wintering and non-destructive harvesting. Everything you need is in one box – the beehive – which you can make yourself.

Top bar beekeeping can produce decent amounts of honey, but the emphasis here is on *sustainability* and *keeping healthy bees* rather than setting records for honey crops, which inevitably has a cost to the welfare of the bees. The essence of sustainability is to work well within the limits of a natural system: pushing any living thing beyond its natural capacity can only lead to trouble.

My version of the top bar hive has several design features worth noting. It is simple to construct, using inexpensive – even re-cycled – materials. Reclaimed, untreated pallet timber can be used, for example. All joints are glued and screwed, which ensures strength and a long life. When empty, the hive is light enough to be lifted quite easily by one person and carried, even when occupied, by two. Because the box is bolted to the legs, it only takes a few minutes to dismantle for transport. The hive is strong, self-contained, versatile and easy to build, even by someone with only basic woodworking skills. It is also easy to manage and once the hive is in place, the heaviest lifting you will need to do is to remove the roof.

In my book, *The Barefoot Beekeeper*, I describe the top bar hive and its management and discuss the philosophy of natural beekeeping, in which we aim to work with the natural impulses and habits of the bees, respecting the integrity

of the brood chamber, leaving them ample honey stores over winter and generally arranging things in order to cause their bees as little stress and disturbance as possible.

I hope soon to be able to welcome you to our Top Bar Beekeeping Forum, which has members from around the world who have chosen this most fascinating way to provide homes for honeybees.

Philip Chandler

Free DIY plans for building a top bar hive are available from the author's web site at www.biobees.com – where you will also find a support and discussion forum for top bar beekeeping. *The Barefoot Beekeeper* is also available formn this site.