

Meet the Researchers

In this issue we have asked Giles Budge from the National Bee Unit to introduce himself and the work he does.



Let me get something straight from the offset, I am not a beekeeper nor is beekeeping in my blood. In fact, my grandfather owned a smallholding, on which he grew Brussels sprouts, and other nutritious seasonal vegetables. My father, had other ideas with land usage, and played his part in the re-landscaping of the Fens into the sprawling metropolis that we enjoy today! At the age of eleven, I went to the local grammar school and it was here that I experienced many formative events, including my first contact with beekeepers. This is the story of how it happened:

Miss Gent was our English teacher, progressive enough in her views to encourage children to talk freely about their extra curricular activities, in a bid to introduce the concept of public speaking. So picture the scene, a fresh faced youth with a keen mind, a sweet tooth, and considerably more hair than on display in recent years (see photo), sitting in a classroom considering what to bring to this 1980's version of show-and-tell. What could I bring to the floor to delight and amaze my peers? Well, as I recall, even at the age of twelve, it was all about instant impact; shock and awe tactics were the best way to boost playground credibility. So I dipped into my brother's extensive

collection of wartime memorabilia and when the day came, donned a full face gas mask and helmet. Once at the front of the class, I planned to stun and amaze by removing the pin from a diffused grenade. Sadly, however, my thunder was stolen by a lad called Chris, who as it happens, was the most unlikely of all usurpers. He rose from his seat dressed in what looked, to my youthful eyes at least, like the costume of an alien hunter, but was actually a white boiler suit with a veil. After part filling the room with eerie smoke from his smoker, he glided to the front to take the stage and steal the show. And thus, my earliest memory of beekeeping was formed; as a beekeeper you got to dress up and start fires - beekeeping was 'cool'.

I went to university not really knowing what to do, other than having an interest in science and a desire to experience life in the big city. As such, I chose to study Biology at the University of East Anglia, in Norwich. Norwich may not be your first choice for a 'big' city destination, but for me it represented twenty times more people per square kilometre than my place of birth! I studied under the watchful eye of Dr Ian Gibson who was Dean of Faculty for Biological Sciences; some of you may know Ian as a fervent supporter of the honey bee research campaign. Still searching for my *raison d'être*, I decided to take a year out in industry, and it is there that I found my purpose, applied science. My placement was split between working in a tissue typing laboratory in Colindale, another two fold increase in population by area, and more rural pursuits working at Horticulture Research International in Kirton. I graduated with a degree in Molecular Biology and Genetics, specialising in pathology, and was offered a job back at HRI Kirton as an assistance scientific officer. Despite spending a large

proportion of my time counting spots on Brussels sprouts to inform disease models, I managed to set up my first field trials in the summer of 1997. I was asked to produce red salad onions and establish which cultivated varieties of sweet potato were suitable for production in the UK climate, interesting stuff.

A year later I moved to work at a wonderful little research farm called ADAS Arthur Rickwood. It was there the real science began, looking at plant pathogen interactions with Dr Tim O'Neill, who was an inspirational boss, and is still one of the best regarded horticultural pathologists in the world. I spent four years working up integrated approaches to pathogen management in field and glasshouse crops before moving 'up north' to the Central Science Laboratory (CSL), since merged to form the Food and Environment Research Agency - Fera. My first few years at CSL were spent as a field based virologist, conducting trials on quarantine viruses of wheat (soil-borne wheat- and wheat spindle streak-mosaic viruses) and sugar beet (beet necrotic yellow vein virus aka rhizomania). I then moved into the laboratory to develop molecular tests for the viruses; work out which cultivars showed resistance; and then, in collaboration with National Institute of Agricultural Botany (NIAB), proceed to identify the genetic basis of resistance to provide diagnostic tests to plant breeders.

I studied for my Phd whilst working full time at CSL and completed my studies in three and a half years. My research was focused on understanding how a nasty plant pathogen, called *Rhizoctonia*, spread through the UK Brassica production industry. During my studies I developed multiple species-specific tests and methods to detect pathogens in large-scale environmental samples, like soil or water. These

methods later proved useful to monitor the spread of foot and mouth disease.

In 2007 I was brought into the National Bee Unit (NBU) with two main objectives. First, to collect scientific evidence to help beekeepers and bee inspectors do their respective jobs and to drive bee health policy. Second, by establishing university collaborations, to get more academics interested in working on honey bees. One thing about good science is that it takes time to build momentum and start to output interesting, robust results. Two years into my job, the NBU research programme is slowly gaining impetus, with seven postdoctoral studentships and research collaborations across the globe. We have helped to obtain funding on honey bee research from BBSRC and NERC research councils, not for our benefit, but to benefit beekeeping. You may notice from my penned curriculum vitae, I love science, but only if it has a purpose. Yes high science is interesting, but unless it has real world application, it fails to hold my attention and I am left asking 'what was the point?' As I said earlier, I am not a beekeeper, but honey bee research does not need another beekeeper. My skills are complemented perfectly by the others in the team within which I operate, to provide an integrated service that the members of the NBU are proud to be part of.

What of the future of honey bee research at the NBU? Well, we are involved in one fifth of the bids that made it through to the second round of the Insect Pollinator Initiative, which is good news for beekeepers because all of our applications try to improve or inform beekeeping practices in some way shape or form. In teaming up with academics we hope exciting times are ahead for honey bee research. To coin a phrase 'the future's bright, the future's yellow and black!'

Dr Giles Budge

Guide to Bees & Honey by Ted Hooper MBE

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