



## Bees- a slow decline to extinction?

I was sitting outside recently when my attention was caught by a lone bee manoeuvring in and out of the bushes searching for flowers. I was struck by the fact that her humble activity is vital to our survival. Most of us have forgotten that bees pollenate plants, which produce fruits, which we eat. Thus we sit-by without concern while the population of bees collapses.

**Across the UK bees have been dying at an alarming rate. Managed Honey Bee colony populations fell by 53% between 1985 and 2005.<sup>1</sup>**

Bees are recognized as a “keystone” of natural ecology. Pollination by insects is the main reproductive mechanism in 78% of temperate flowering plants and bees are the primary pollinators.

Such plants provide us with our food in the form of their seeds or fruit. Therefore pollination by bees is a critical aspect of agricultural production in the UK. Yet despite their essential role there has been little action to save the bee.

The dramatic decline in bee populations may be due to a combination of factor including disease, habitat loss, and chemical toxicity.

Various pests and diseases are thought to be the cause substantial losses in Honey Bee colonies. These include mites like *Varroa destructor*, fungi of the *Nosema* family, foulbrood bacteria, for example *Melissococcusplutonius* and several viruses.



Strict regulations on the importation of bees have been introduced to reduce the risks of introduction of diseases and pests.

Over the last fifty years agricultural production in the United Kingdom has shifted to an industrialised system characterised by large fields of monoculture crops. This has had a severe impact on the availability of suitable environments for foraging by bees and has been identified as one of the main reasons for their decline.

Industrial agriculture also depends on the use of increasing levels of herbicides and pesticides to control weeds and pests. These have several effects on bee populations.

Herbicides kill many flowering plants that previously would have provided food. The insecticides can have more direct effects including: reduced breeding success, lower disease resistance, disruption of homing senses, and death. In a report on *“The decline of England’s bees”* researchers at Reading University state that:

**“Insecticides have been demonstrated to have severe negative impacts upon bees.”<sup>1</sup>**

The group of insecticides known as neonicotinoids are highly effective insect neurotoxins. The use of certain of these compounds, like Thiamethoxam and Clothianidin, has increased substantially over recent years.

They are absorbed by treated seeds and plants and can be found in both pollen and nectar. Research has found that this can have sub-lethal effects on foraging bees.

The UK Government’s own review of the science concluded that they *“could not exclude the rare effects of neonicotinoids on bees in the field”* but decided that the risk to bee populations, as they are currently used, is low.<sup>2</sup>

Others however, while recognizing that the control of pests is important to maintain farming yields, also see that production priorities should not outweigh the survival of the Honey Bee and the long term viability of food production.



Therefore regulations have been introduced to control the use of these toxins.

Additional research into the effects of certain neonicotinoids identified a high and acute risk for bees from exposure and consumption of residues in contaminated pollen and nectar. These potential chronic effects on colony survival were deemed to be unacceptable.

On the 24<sup>th</sup> May 2013 the European Union took action and enacted the Commission Implementing Regulation (EU) No. 485/2013 which introduced a complete ban on these substances for two years starting on 1<sup>st</sup> December 2013.<sup>3</sup> This positive action is a rare and welcome step to save the bee

With the political will the UK Government could do more. For example bees would benefit from nationwide subsidies that promote the planting and maintenance of semi-natural areas like meadow, natural grasslands and the restoration of hedgerows.

What can we do? Gardens and allotments can provide useful foraging and nesting sites for bees. So, if you have one, plant diverse flowering plants and avoid the use herbicides or insecticides.

Pollination by bees is crucial to our natural environment and our food supplies. Prompt and strong action is required to halt the decline in population of both wild and managed bees.

**We need to act, and quickly, to reverse their slow decline to extinction.**



1. Breeze, Roberts and Potts (2012)  
*The decline of England's Bees.*

University of Reading

2 Department for Environment, Food and Rural Affairs (2013)

*An assessment of key evidence about Neonicotinoids and bees.*<sup>3</sup>

European Commission (2013)

*Commission Implementing Regulation*

(EU) No. 485/2013

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