Insect Pollinators Initiative

Modelling systems for managing bee disease: the epidemiology of European foulbrood

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Honeybees are an important managed pollinator, able to provide mobile pollination services to aid crop production. Honeybee populations are threatened by a range of established and emerging diseases. With new and increasing stresses on bees, it is important to examine ways of preventing and tackling these diseases. In the UK we have 20 years worth of data about where and when some diseases have been found. This project will use data on one of these diseases, European foulbrood (EFB), as an example to model how this and other diseases are moving in the UK landscape. It will also generate new data about how the pathogen behaves within the colony and study how the genetics of the bee, the behaviour of the beekeeper, and changing meteorological conditions determine the spread of disease. The project aims to create the first model of its kind that can be applied at different scales (colony, apiary, region etc.) and to different bee diseases.

Ultimately, this project aims to develop a system that can make predictions about the epidemiology of a range of bee diseases, and lead to the development of effective means of controlling disease occurrence. In the shorter term it seeks to deliver improvements in how we inspect and monitor for EFB, and how we may decrease the impact of EFB and related diseases on our honeybee population.

This project is in partnership with Dr Ed Feil at the University of Bath, Professor Stephen Rushton at Newcastle University and Professor Matt Keeling at the University of Warwick.

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