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Vardayani Ratti* (vardayani.ratti@dartmouth.edu), **Peter G Kevan** and **Hermann J Eberl**. *Using Mathematical Model to Study How the Interplay Between Various Stressors Affects the Dynamics of Honeybee Colonies.*

The western honeybees are vanishing. Recent years have seen honeybees in distress, with up to 35% of colonies breaking down annually. There is no single cause that is believed to be responsible for the colony losses. In this talk, a mathematical model for the honeybee-varroa mite-virus complex is presented in which, based on division of labour, the bee population is divided into two categories: hive bees and forager bees. The model consists of ordinary differential equations for the dependent variables: uninfected hive bees, uninfected foragers, infected hive bees, virus-free mites, and virus-carrying mites. The main objective of the model is to study the interplay between disease propagation and division of labour in a honeybee colony. The model focuses on Acute Bee Paralysis Virus and is studied using a combination of analytical and computational techniques. (Received September 26, 2017)