

# Researcher provides global perspective on honeybee viruses

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Grad student Scott Nikaido and researcher Dr. Ethel Villalobos examine honeybees in a hive.

The global decline of honeybee populations has spurred a number of researchers to examine the role played by the parasitic varroa mite and the deadly Deformed Wing Virus it transmits. In early February a large-scale research article (Wilfert et al.) was published in the prestigious journal *Science*. This study provides insight on the geographical origin and evolutionary history of the mite and the virus. Dr. Ethel Villalobos, a bee researcher of the Department of Plant and Environmental Sciences in the College of Tropical Agriculture and Human Resources, was requested by the editors of *Science* to write an accompanying piece to this article, which was published in the same issue in a section called "Perspectives."

Dr. Villalobos' article, titled "The [mite](#) that jumped, the bee that traveled, and the disease that followed," provides context to the study by examining, in lay terms, the historical movement of managed European [honeybee](#) colonies out of their native range. The Perspectives article examines how the human transport of managed hives had unforeseen repercussions with respect to bee health. The European bee was exposed to new environments and was placed in contact with the Asian honeybee and its parasites. One parasitic mite, *Varroa destructor*, "jumped" host species to the European bee and became a vector of previously mild viral diseases, in particular the DWV, which is now amplified in virulence due to mite transmission.

The subsequent movement of managed colonies helped spread the combination of mite and disease to most parts of the world, with the exception of a few of the Hawaiian Islands and Australia. Dr. Villalobos indicates that these geographical "refugia" hold valuable information about the DWV virus. Recent studies suggest that the high viral levels found in bees can spill over to the pollinator community as whole. Thus, the data gathered about honeybee viruses is valuable not only for beekeepers or growers that depend on bees, but also for conservationists. Understanding the vector, pathogen, transmission routes and infectivity

is crucial for honeybee health and pollinator conservation worldwide.

Dr. Villalobos is the director of the UH Honeybee Project, which conducts research, outreach and education. The program has a strong focus on sustainable beekeeping and farming practices to promote pollinator-friendly habitats. The group's ongoing studies in viral diseases include honeybees and other pollinators.

**More information:** E. M. Villalobos. The mite that jumped, the bee that traveled, the disease that followed, *Science* (2016). [DOI: 10.1126/science.aaf0938](https://doi.org/10.1126/science.aaf0938)

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