

Colony Collapse Claims Collapse

A recent USDA analysis of bees stored as samples in 2002 - 2007 apparently contradicts prior claims about Colony Collapse Disorder made by USDA, Columbia U, and Penn State researchers.

The new finding, to be published in the December issue of *American Bee Journal*, is that Israeli Acute Paralysis Virus (IAPV) was widespread in the US several years before both the appearance of the symptoms now called "Colony Collapse Disorder" (CCD) and the first exports of Australian bees to the US.

The discovery that IAPV is neither new to the US nor unique to colonies suffering from CCD tends to undermine multiple claims central to the prior paper "*A Metagenomic Survey of Microbes in Honey Bee Colony Collapse Disorder*" (*Science*, Sept 6, 2007).

First, the basic claim that the IAPV is "**a significant marker**" for CCD appears to be refuted. In 2002-2005, neither CCD nor any other unusual symptoms were observed, yet IAPV had infected roughly 10% of the bees sampled in those years.

Second, IAPV was claimed to have been found in bees imported from Australia, which were "**tested as potential sources of pathogens**". It was also noted that CCD appeared only after Australian bees were imported to the US. The finding of IAPV in years prior to the first bee imports indicate that Australian bees may have been wrongly accused of being "sources" of pathogens.

Finally, the claim that the work leading to the first paper was a "**model to establish a strategy for investigating epidemics of unexplained infectious disease**" is called into question. The work clearly suffered from the small number of samples, due to the high cost per sample for this new technology. So, claims were made and inferences were drawn beyond those firmly supported by the limited sample set. Ironically, the samples from years well before CCD appeared in the US would have made excellent "controls", and were readily available.

But why didn't anyone find IAPV in 2002? Jay Evans, one of the authors of the new paper, has a good answer – "**Viruses can be effectively invisible when tools developed for other species are used. Recent genomic advances only recently gave us a chance to screen for unknown viruses.**" So, while it was possible to find "known" viruses in years past, it wasn't possible to detect unknown ones.

The newer paper, "[Historical presence of Israeli Acute Paralysis Virus in the United States](#)" ([Yanping Chen and Jay D. Evans, American Bee Journal 10/2007](#)) makes a valiant attempt to present evidently contradictory evidence as mere clarification, rather than refutation of multiple basic points. This is accomplished by speculating about different strains of IAPV, even when the specific samples examined defied attempts to identify tangible differences. (Below we will quote the paper in **bold italic**, and translate into a beekeeper's plain English cynicism in **bold red**.)

“IAPV isolates... can be split into four distinct clusters supported with bootstrap statistical values > 55%”

“We found very minor differences between US samples.”

Israeli samples, including the strain first named as IAPV, are not distinct from the U.S. isolates as a group.”

“Israeli versions of IAPV aren’t at all different from US versions, so we can’t explain why IAPV killed bees and brood in mere days in Israel, but not in the US.”

“These three complete genomes, when compared to the definitive (Israeli) IAPV genome sequence, show 4.2 –4.7% divergence at the RNA level...”

“We have no idea of the implications of a 4.2% difference, if any, but 4.7% is a bigger number, and might have even bigger implications.”

“Genetic heterogeneity across the studied 5’ region is interesting in that this region is involved in the initiation of protein translation, and genetic variability of this region may lead to different pathogenicities.”

“We looked at the “prelude” section of the gene, before the gene settles down and does any actual coding, and speculate that differences here MIGHT explain how Israel’s version of IAPV can be more virulent than the US version, but the US version can cause CCD when the Israeli version does not.

We are hoping that the reader won’t glance back to where we said that Israeli samples are NOT distinct from the US isolates as a group, as we are now speculating that there are significant differences, and that they matter.”

“Nevertheless, we caution that much work is still needed to absolve or implicate this virus, or specific imports, in CCD... Further analyses are needed to explore the implications of these and other genome sequences for virulence traits of IAPV.”

“Rather than simply admitting that too much speculation about too little data was done in the last paper on CCD, we will speculate our way even further out on a limb, in an attempt to explain away these new findings rather than admit to speculating the first time.

We will also seek additional funding to look for other reasons to not change our initial highly speculative theory in light of this new, compelling, and very surprising evidence.”

James Fischer translates scientific jargon into plain English in a futile attempt to ignore several hundred frames that await assembly.
