

## World Trade, Realpolitik, and Beekeeping

The recent paper "***A Metagenomic Survey of Microbes in Honey Bee Colony Collapse Disorder***" (***Science***, 09/06/07) mentions Australia in connection with Colony Collapse Disorder (CCD). Mention is made of Australia sixteen times in a paper that is only fourteen paragraphs long, to be exact.

What's up with that? Australia hasn't reported any cases of CCD.

The authors of the paper have pointed an accusing finger at Australia as being the source of CCD. That's a pretty amazing trick for a paper that stops far short of having found any specific cause or causes for CCD.

The paper claims that samples of "***apparently healthy bees imported from Australia***" were found to have at least one virus said to be "strongly correlated with CCD", a bee virus named "Israeli Acute Paralysis Virus" (IAPV).

Israelis? Australians? What possible connection could either country have to a problem that has yet to be confirmed as existing anywhere except in the USA? Before this turns into a John le Carré spy novel, let me make it clear up front that all the evidence upon which these claims are based is in need of further confirmation before any of us should believe any of it.

The reason to be very sure about this evidence before making such accusations is that there are implications for World Trade. The WTO has rules that would force the US to provide clear and compelling proof of any such claim. If we are serious about this, there's a process to handle it. Step one is to have facts, rather than mere speculation. Step two is to have very clear proof, as anything less won't convince anyone at the WTO.

The central accusation was: "***All CCD operations sampled used imported bees from Australia or were intermingled with operations that had done so.***"

That's a statement with pretty serious implications, given that beekeepers in Australia make good money selling bees to US and Canadian beekeepers who want to expand the number of colonies they have, or merely repopulate hives that died from any one of dozens of things that can kill a bee colony.

Does the paper substantiate the accusation it makes? No, it doesn't.

First, the virus named in the paper may well be another fairly common virus that's been known for a while, Kashmir Bee Virus (KBV). It is difficult to say for sure, as the two are very closely related. So close, that IAPV may be nothing but a mutation or variant of KBV. This is not my speculation; these are the open admissions of the authors of the paper. They didn't put it in the paper, but they

talked about it in the press conference held when the paper was announced to the press. The “press” did not pick up on the admission as important, even though the difference between the two viruses was described as “a moot point”.

Second, the methods used to detect the viruses and other pathogens of bees can’t differentiate between the actual virus itself and mere evidence of prior exposure to the virus, perhaps several bee generations back. (All this will be addressed in the section “A Beekeeper Reads the Paper”, which will cover the technical details.)

I have to note that even “Science Magazine”, published by the same organization that publishes the journal “Science” ran an article with the headline “**Puzzling Decline of U.S. Bees Linked to Virus From Australia**”. Now, if “Science” can’t read the paper they themselves published, and take the time to understand what is proven versus what is not, or bother to listen and comprehend what is said in the press conference they themselves held, can we expect any other media outlet to “get the story right”? I don’t think so. So, you read it here first, and you likely won’t read a word of it anywhere else.

But let’s pretend to blindly accept for the moment the technical claims of the paper:

- That a virus was actually found by the methods used
- That the virus “strongly correlated” to cases of CCD
- That the virus was also found in samples from Australian hives

How do they claim that Australia is to blame for this exotic invasive bee disease? They said: “**Importation to the United States of bees from Australia began in 2004, coinciding with early reports of unusual colony declines.**”

But wait, that’s wrong. Completely wrong. Hives of bees from Australia were ending up in the US as early as 1987. What happened was that Canadian beekeepers were importing packages of bees from Australia and New Zealand, and some hives were trucked down to the USA from time to time, as Canadians sold hives to US beekeepers, and in at least one case, a Canadian beekeeper decided to move from Canada to the US, bees and all. Some of those bees may also have been ancestors of replacement queens sold to US beekeepers as “Canadian Cold-Hardy Bees”.

So “Australian bees”, and any diseases of those bees, have had ample time to make their way into the US, and would have been noticed long before Australia started shipping bees directly to the US in 2004.

Now, it is true that the quantity of “Australian bees” coming into the US has been much larger since 2004, but they’ve clearly been shipped to Canada in large

quantities for 20 years, and even today, Canadian beekeepers don't seem to have CCD-like symptoms in their hives.

What alternative source of Israeli Acute Paralysis Virus might exist? Might Australia and the US have each been victimized by this source? One answer appears in the supplemental materials released with the paper, and available from the website associated with the journal "Science". There we can read:

***"...four samples of imported royal jelly from China, were also tested as potential sources of pathogens... queen breeders in the U.S. and in other countries use purchased royal jelly to wet-graft and promote queen production."***

Before anyone asks, no, beekeepers do not put Royal Jelly on their toast, even if we might use margarine from the Imperial Margarine company. Royal Jelly is another name for "brood food", fed to bee larvae by adult bees. China has always been the biggest supplier of this substance, as it is very labor-intensive to scoop tiny amounts of it out of brood cells, and China specializes in low-cost, labor-intensive operations like these.

Some queen producers buy royal jelly from China, as it is cheaper to buy it from China than to take the time and effort to collect it from their own bee hives. They use it in queen breeding. They sell the queens to beekeepers all over the US.

Two of four samples of Chinese royal jelly were found by the researchers to contain evidence of the Israeli Acute Paralysis Virus.

So, it is just as possible that queen producers in both the US and Australia infected their queens with royal jelly from China as it might be that the US was infected by bees shipped from Australia. But somehow, Australia alone is blamed.

Note the use of the term "***apparently healthy***" in the accusatory phrase "***apparently healthy bees imported from Australia***". The term "Kangaroo Court" seems to somehow be appropriate here.

I'd like to apologize to the beekeepers of Australia for the public bashing they are about to endure due to the groundless accusations made in the paper.

In an ironic twist, Australia is the host country for this year's "Apimondia", an international beekeeper's convention. I hope that the "Science" paper does not dampen the festivities.