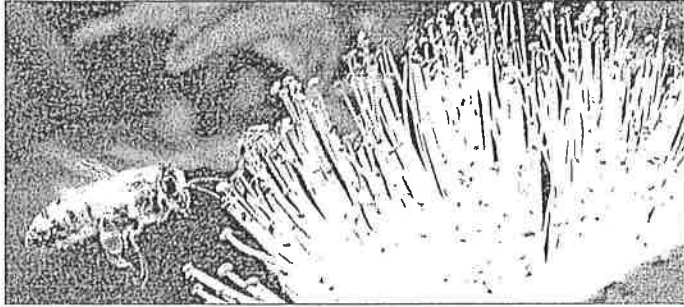


Newfound virus may be culprit in honeybees' collapse



PAUL CARTER / *The Register-Guard*

Reports of bee colony collapse disorder date to 2004; researchers suspect that bees imported from Australia may have carried a virus.

BY ANDREW BRIDGES
The Associated Press

WASHINGTON — Scientific sleuths have a new suspect for a mysterious affliction that has killed off honeybees by the billions: a virus previously unknown in the United States.

The scientists report using a novel genetic technique and old-fashioned statistics to identify Israeli acute paralysis virus as the latest potential culprit in the widespread deaths of worker bees, a phenomenon known as colony collapse disorder.

Next up are attempts to infect honeybees with

the virus to see if it indeed is a killer.

“At least we have a lead now we can begin to follow. We can use it as a marker and we can use it to investigate whether it does in fact cause disease,” said Dr. W. Ian Lipkin, a Columbia University epidemiologist and co-author of the study. Details appear this week in *Science Express*, the online edition of the journal *Science*.

Experts stressed that parasitic mites, pesticides and poor nutrition all remain suspects, as does the stress of travel. Beekeepers shuffle bees

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Bees: Imports being considered as potential source of new virus

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around the nation throughout the year so the bees can pollinate crops as they come into bloom, contributing about \$15 billion a year to U.S. agriculture.

The newfound virus may prove to have added nothing more than insult to the injuries bees already suffer, said several experts unconnected to the study.

"This may be a piece or a couple of pieces of the puzzle, but I certainly don't think it is the whole thing," said Jerry Hayes, chief of the apiary section of Florida's Agriculture Department.

Still, surveys of honey bees from decimated colonies turned up traces of the virus nearly every time. Bees untouched by the phenomenon were virtually free of it. That means finding the virus should be a red flag that a hive is at risk and merits a quarantine, scientists said.

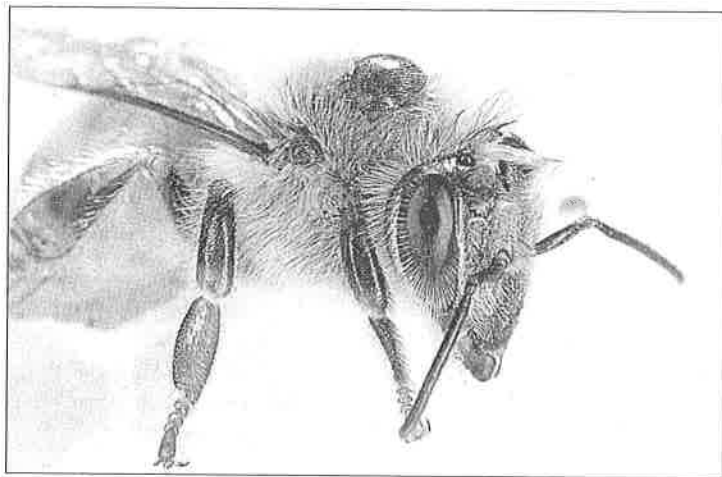
"The authors themselves

recognize it's not a slam dunk, it's correlative. But it's certainly more than a smoking gun — more like a smoking arsenal. It's very compelling," said May Berenbaum, a University of Illinois at Urbana-Champaign entomologist who headed a recent examination of the decline in honeybee and other pollinator populations across North America.

For Berenbaum and others, colony collapse disorder is only the latest devastating problem to beset bees.

"Even if we were to solve this CCD thing tomorrow — a magic pill came out and your bees were cured forever — we would still be in a crisis situation because we have these other problems," said Nicholas Calderone, an entomologist at Cornell University. His lab's roughly 200 hives have so far escaped the disorder.

Colony collapse disorder has struck between 50 percent and 90 percent of commercial honeybee hives in the United



SCOTT BAUER / Science

A honeybee carrying a varroa mite. Australian imports were meant to bolster U.S. bee populations devastated by the mite.

States. That has raised fears about the effect on the more than 90 crops that rely on bees to pollinate them.

Scientists previously have found that blasting emptied hives with radiation apparently kills whatever infectious agent that causes the disorder. That

has focused their attention on viruses, bacteria and the like, to the exclusion of other noninfectious phenomena, such as cell phone interference, that are also proposed as culprits.

The earliest reports of colony collapse disorder date to 2004, the same year the virus

was first described by Israeli virologist Ilan Sela. That also was the year U.S. beekeepers began importing bees from Australia — a practice that had been banned by the Honeybee Act of 1922. Now, Australia is being eyed as a potential source of the virus. That could turn out to be an ironic twist because the Australian imports were meant to bolster U.S. bee populations devastated by another scourge, the varroa mite.

Officials are discussing reinstating the ban, said the Agriculture Department's top bee scientist, Jeff Pettis.

In the new study, a team of nearly two dozen scientists used the genetic sequencing equivalent of a dragnet to round up suspects. The technique, called pyrosequencing, generates a list of the full repertoire of genes in bees they examined from U.S. hives and directly imported from Australia.

By separating out the bee genes and then comparing the leftover genetic sequences with

others detailed in databases, the scientists could pick out every fungus, bacterium, parasite and virus harbored by the bees. The scientists then looked for each pathogen in bees collected from normal hives and others affected by colony collapse disorder. That statistical comparison showed that Israeli acute paralysis virus was strongly associated with the disorder.

Sela, a professor at the Hebrew University of Jerusalem, said he will collaborate with U.S. scientists on studying how and why the bee virus may be fatal. Preliminary research shows some bees can integrate genetic information from the virus into their own genomes, apparently giving them resistance, Sela said in a telephone interview. Sela added that about 30 percent of the bees he has examined had done so.

Those naturally "transgenic" honeybees theoretically could be propagated to create stocks of virus-resistant insects, Lipkin said.