

Mystery Bee Disappearances Sweeping U.S.

Stefan Lovgren in Los Angeles
for [National Geographic News](#)

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Without a trace, something is causing bees to vanish by the thousands. But a new task force hopes to finger the culprit and save the valuable crops that rely on the insects.

Pennsylvania beekeeper Dave Hackenberg was the first beekeeper to report to bee researchers what's become known as colony collapse disorder (CCD).

In October Hackenberg had delivered [honeybees](#) to a Florida farm to pollinate crops. The bees typically return to their boxed hives when their work is done. But this time was different.

"I came to pick up 400 bee colonies and the bees had just flat-out disappeared," Hackenberg said. "There were no dead bees, no bees on the ground, just empty boxes."

"In almost 50 years as a beekeeper, I've never seen anything like it."

CCD has spread throughout 24 states and ruined hundreds of thousands of bee colonies.

Hackenberg has lost roughly 1,900 of his 2,900 hives. Other operators have lost up to 90 percent of their hives.

Researchers are scrambling to find answers to what is causing the commercially important honeybees to abandon their hives and disappear.

The epidemic could put a strain on fruit growers and other farmers who rely on the insects to pollinate their crops.

(Related: ["Bee Decline May Spell End of Some Fruits, Vegetables"](#) [October 5, 2004].)

An estimated 14 billion U.S. dollars in agricultural crops in the United States are dependent on bee pollination.

"A lot of people think honeybees are only important for the honey they produce," entomologist Maryann Frazier said. "But much, much more important are their pollination services."

The Pennsylvania State University professor is part of the 12-person task force looking into the crisis.

Without a Trace

Large commercial beekeepers each keep up to 10,000 colonies. A typical colony has about 20,000 bees in the winter and up to 60,000 in the summer.

The colonies are moved around the country and used for pollinating agricultural crops, including seeded fruits such as apples, citrus crops, and almost anything that grows on a vine.

When a hive is afflicted by CCD, most adults abandon the hive and disappear.

They leave behind only the queen bee and some younger bees. Uncapped brood—young bees in the pupa stage that are still developing—are also abandoned.

No carcasses are found near the hive—the bees are just gone.

"It's a total mystery where they're going and why they're leaving," Frazier said.

Normally, honey-hungry pests or bees from other colonies would quickly overrun a failing bee colony. But when CCD attacks, the hives are left untouched.

Unknown Pathogen

Epidemics of disappearances like the current one have been documented as far back as 1896. But no cause has ever been established, scientists say.

The United States' bee population had already been hit in recent years by a tiny, parasitic bug called the varroa mite, which has destroyed more than half of some beekeepers' hives.

Some experts say bee deaths that have been blamed on mites or poor management may actually have resulted from the mystery disorder.

The CCD epidemic "may have started at least two or three years ago," said Jerry Bromenshenk, a University of Montana entomologist who leads a company called Bee Alert Technology, Inc.

In the meantime, viruses carried by mites may have become more virulent to the bees.

"There might be some new pathogen that has been introduced and we don't know it's there," said Frazier of Penn State.

She and other scientists are worried that the disorder could be a contagious disease. Using contaminated equipment or combining survivors of CCD outbreaks with healthy colonies might spread the supposed disease further, Frazier said.

Researchers are also looking into the effects that pesticides might be having on bees.

In Florida, beekeepers say citrus growers are compounding the problem by spraying pesticides to kill off a fruit-tree pest known as greening disease. The pesticides likely wipe out bees at the same time.

All Eyes on California

The task force is now conducting chemical and genetic analysis of hives hit by CCD.

"We have to find out where and when this has happened, how the bees were managed, and what difference, if any, there is between beekeepers with the problem and beekeepers who have not experienced the disorder," said Bromenshenk of Bee Alert Technology.

Researchers are closely watching what is happening to bee colonies currently pollinating California's 1.4-billion-dollar almond crop. Almonds are 100 percent dependent on bee pollination.

Already some beekeepers have reportedly seen their colonies in California collapse during the almond pollination.

Meanwhile, Pennsylvania beekeeper Hackenberg is working on replacing the bees he has lost. On Thursday night he was on his way to Miami, Florida, to receive a shipment of almost six million bees imported from Australia.

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