The incomparable honeybee & the economics of pollination / Reese Halter.

By: Halter, Reese.

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A story of reciprocation -- In the beginning [sic] -- Native bees of North America -- Bumble bees -- The complex society of honeybees -- Intricate steps of communication -- The gifts they give us -- Bees and food production -- Down a path we can't sustain -- How to help the bees recover.

"From Dr. Reese Halter comes a remarkable, concise account of the honeybees that have profoundly shaped our planet for the past 110 million years. They are the most important group of flower-visiting animals, pollinating more multi-billion-dollar crops and plants than any other living group. Since prehistoric times humans and honeybees have been inextricably linked." "This book is rich with interesting and humbling facts: bees can count, they can vote, and honey has potent medicinal properties, able to work as an anti-inflammatory, antibacterial, antifungal, antioxidant, even an antiseptic. The fate of the bees, whose numbers have been beleaguered most recently by colony collapse disorder, lies firmly in the hands of humankind. As such, it is our job to ensure their health, protect the habitats within which they live and communicate to others the vital link that human society shares with the remarkable honeybee."--BOOK JACKET.

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Honey Bees: Heroes of Our Planet

Have you ever had the opportunity to observe the busy work of a tiny honey bee as it meanders from flower to flower on a clear, sunny day? There’s something truly captivating about honey bees that draws us deeper into their world. We see honey bees frequently in books, movies, and television, where they are often associated with making hives filled with delicious, golden honey. You might recall reading about a hungry bear character in search of the honey bee’s golden treasures in various children’s stories. Honey bees are known for their production of honey and beeswax, as well as the large role they play in the pollination of plants and flowers. Honey bees can also be considered super-organisms due to their complex social systems and dynamic, tight-knit interactions with one another and their environments.

History of Beekeeping

https://thehoneybeeconservancy.org/2017/03/27/21-flowers-that-attract-bees/
These Pesticides Could Be Birth Control for Bees

The world's most widely used insecticides leave drones with less sperm for their queen. Could this be a factor in the worldwide collapse of honeybee colonies?

By Lindsey Konkel

Published July 26, 2016

The world's most widely used pesticides may be acting as birth control for male bees, according to new research published Tuesday.

Male honeybees exposed to neonicotinoid insecticides produced fewer living sperm cells than unexposed males.

The study by scientists in Switzerland is the first to examine the effects of this class of pesticides, which has been linked to honeybee die-offs in recent years, on the fertility of male bees. "Our data highlight one possible way that neonicotinoids can affect honeybees," said senior study author Geoff Williams, a bee researcher at the University of Bern in Switzerland.

Male honeybees, called drones, serve one purpose—to mate with a queen. Because their main contribution to the colony comes in the form of sperm, they often are overlooked in studies of colony survival. Yet poor mating can take a toll on the productivity of a queen bee and the success of a colony.
The mystery of vanishing honeybees is still not definitively solved

The sudden disappearances of the previous decade have been dwarfed by other pollinator problems

By Susan Milius 1:42pm, January 17, 2018

It was one of the flashiest mysteries in the news about a decade ago — honeybee workers were vanishing fast for no clear reason. To this day, that puzzle has never been entirely solved, researchers acknowledge.

And maybe it never will be. Colony collapse disorder, or CCD, as the sudden mass honeybee losses were called, has faded in recent years as mysteriously as it began. It’s possible the disappearances could start up again, but meanwhile bees are facing other problems.

CCD probably peaked around 2007 and faded since, says Jeff Pettis, who during the heights of national curiosity was running the Beltsville, Md., honeybee lab for the U.S. Department of Agriculture’s research wing. And five years have passed since Dennis vanEngelsdorp, who studies bee health at the University of Maryland in College Park, has seen a “credible case” of colony collapse.

Beekeepers still report some cases, but Pettis and vanEngelsdorp aren’t
More than Honey

Meier, Pierre-Alain (producer), Kufus, Thomas (producer), Grasser, Helmut (producer), Imhoof, Markus (producer), and Imhoof, Markus (director). New York, NY: Kino Lorber. Jan 1, 2013.

Abstract

Oscar-nominated director Markus Imhoof (The Boat is Full) tackles the vexing issue of why bees, worldwide, are facing extinction. With the tenacity of a man out to solve a world-class mystery, he investigates this global phenomenon, from California to Switzerland, China, and Australia. Exquisite macro-photography of the bees (reminiscent of Microcosmos) in flight and in their hives reveals a fascinating, complex world in crisis. Writes Eric Kohn in Indiewire: "Imhoof captures the breeding of queen bees in minute detail, ventures to a laboratory to witness a bee brainscan, and discovers the dangerous prospects of a hive facing the infection of mites. In this latter case, the camera's magnifying power renders the infection in sci-fi terms, as if we've stumbled into a discarded scene from David Cronenberg's <i>The Fly</i>." This is a strange and strangely moving film that raises questions of species survival in cosmic as well as apiary terms.

Details

Subject
- Beekeeping;
- Bees;
- Ecosystems

Location
- Australia; China; Switzerland; California

Production company
- Ormenis Film AG; Thelma Film AG; Zero One Film; Allegro Film, Vienna, Austria; Bayerischer Rundfunk; Schweizer Radio und Fernsehen

Identifier / keyword
- Environmental Studies; Social Sciences; Ecology

Clip length
- 01:35:25

Title
- More than Honey

Director
- Imhoof, Markus

Producer
- Meier, Pierre-Alain; Kufus, Thomas; Grasser, Helmut;
  Imhoof, Markus

Publication year
- 2013

Publisher
- Kino Lorber

Location
- New York, NY
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Bees are flying insects closely related to wasps and ants, known for their role in pollination and, in the case of the best-known bee species, the European honey bee, for producing honey and beeswax. Bees are a monophyletic lineage within the superfamily Apoidea, presently considered as
Bees belong to the insect superfamily Apoidea of order Hymenoptera, which includes wasps and ants. The name Hymenoptera is derived from Greek, meaning “winged membrane,” and it is the third largest group of insects with more than 130,000 species in the order. Ants and bees play vital roles in agriculture, ants being useful in aerating soil and bees in pollinating plants. Wasps play an important part as predators to other insect pests and bees are the source of honey and wax, which have been highly valued by human beings since antiquity.

Hymenoptera are distinguished by having two pair of wings that are veined in cross angles creating a cell-like pattern. The rear wings are smaller than the front ones, and wing color ranges from brown with yellow markings to red, white, blue, or green marks. Male Hymenoptera have 13 segments in their antennae, while females have only 12. Most Hymenopterons have chewing mouthparts with a pair of mandibles, but bees have a long tongue (proboscis) to lap nectar. Bees have a complete, four-stage metamorphosis from egg, larva, pupa, to adult. Some species of bees, as well as ants and some wasps, form colonies under a caste system, while other species are solitary.

The more than 20,000 species of bees are assigned to the superfamily Apoidea, which includes 14 extant families. The diversity of bees includes the yellowfaced, plasterer, oxaeid, andrenid, sweat, melittid, leafcutting, mason, cuckoo, digger, carpenter, bumble, and honey bees. The latter two are the most common and both belong to the family Apidae. Bees are characterized by the vein pattern on their wings and by the size of their tongues. Some have a short tongue and others a long, slender one. Bees are able to chew as well as suck with their mouthparts.

Bees mainly eat nectar and pollen, which they also store in their hives or nests for their larvae to eat. A segment of the rear legs of bees is enlarged and somewhat flattened and serves as a carrying device for the pollen they collect. Male bees have seven segments in the abdominal region, while females have only six. Hair-like setae densely cover the bodies of bees. Plants that bees pollinate include most fruits, numerous vegetables, and field crops like cotton, tobacco, and clover. While the bees that are most beneficial for commercial production of honey are social bees, many families of bees are solitary in nature. Bees are also diurnal, that is, they are active in the daytime.
Report Says Fewer Bees Perished Over the Winter, but the Reason Is a Mystery

By John Schwartz

May 15, 2014

Honeybees could be on their way back, according to a new federal report.

The collapse of bee populations around the country in recent years has led to warnings of a crisis in foods grown with the help of pollination. Over the past eight years, beekeepers have reported winter losses of nearly 30 percent of their bees on average.

The new survey, published on Thursday, found that the loss of managed honeybee colonies from all causes dropped to 23.2 percent nationwide over the winter that just ended, down from 30.5 percent the year before. Losses reported by some individual beekeepers were even higher. Colony losses reached a peak of 36 percent in 2007 to 2008.

The survey of thousands of beekeepers was conducted by the Department of Agriculture and the Bee Informed Partnership, an organization that studies apian health and management.

“It’s better than some of the years we’ve suffered,” said Dennis vanEngelsdorp, a director of the partnership and an entomologist at the University of Maryland. Still, he noted, a 23 percent loss “is not a good number.” He continued, “We’ve gone from horrible to bad.”

He said there was no way to say at this point why the bees did better this year.

Jeff Pettis, the co-author of the survey who heads the federal government’s bee research laboratory in Beltsville, Md., warned that “one year does not make a trend.”

A prominent environmental group found “an urgent need for action” in the new report. Lisa Archer, director the food and technology program for the organization Friends of the Earth, said, “These dire honey bee numbers add to a consistent pattern of unsustainable bee losses in recent years.”

While much attention has been paid to colony collapse disorder, in which masses of bees disappear from hives, that phenomenon has not been encountered in the field in the past three years, Dr. vanEngelsdorp said. Instead, what has emerged is a complex set of pressures on managed and wild bee populations that includes disease, a parasite known as the varroa mite, pesticides, extreme weather and poor nutrition tied to a loss of forage plants.
RESEARCH ARTICLE

Colonies Collapse Disorder (CCD) and bee age impact honey bee pathophysiology

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Abstract

Honey bee (Apis mellifera) colonies continue to experience high annual losses that remain poorly explained. Numerous interacting factors have been linked to colony declines. Understanding the pathways linking pathophysiology with symptoms is an important step in understanding the mechanisms of disease. In this study we examined the specific pathologies associated with honey bees collected from colonies suffering from Colony Collapse Disorder (CCD) and compared these with bees collected from apparently healthy colonies. We identified a set of pathological physical characteristics that occurred at different rates in CCD diagnosed colonies prior to their collapse: rectum distension, Malpighian tubule iridescence, fecal matter consistency, rectal enterotholiths (hard concretions), and venom sac color. The multiple differences in rectum symptomology in bees from CCD apiaries and colonies suggest effected bees had trouble regulating water. To ensure that pathologies we found associated with CCD were indeed pathologies and not due to normal changes in physical appearances that occur as an adult bee ages (CCD colonies are assumed to be composed mostly of young bees), we documented the changes in bees of different ages taken from healthy colonies. We found that young bees had much greater incidences of white nodules than older cohorts. Prevalent in newly-emerged bees, these white nodules or cellular encapsulations indicate an active immune response. Comparing the two sets of characteristics, we determined a subset of pathologies that reliably predict CCD status rather than bee age (fecal matter consistency, rectal distension size, rectal enterotholiths and Malpighian tubule iridescence) and that may serve as biomarkers for colony health. In addition, these pathologies suggest that CCD bees are experiencing disrupted excretory physiology. Our identification of these symptoms is an important first step in understanding the physiological pathways that underlie CCD and factors impacting bee health.
Colony Collapse Disorder

Colony Collapse Disorder is the phenomenon that occurs when the majority of worker bees in a colony disappear and leave behind a queen, plenty of food and a few nurse bees to care for the remaining immature bees and the queen. Once thought to pose a major long term threat to bees, reported cases of CCD have declined substantially over the last five years. The number of hives that do not survive over the winter months – the overall indicator for bee health – has maintained an average of about 28.7 percent since 2006-2007 but dropped to 23.1 percent for the 2014-2015 winter. While winter losses remain somewhat high, the number of those losses attributed to CCD has dropped from roughly 60 percent of total hives lost in 2008 to 31.1 percent in 2013; in initial reports for 2014-2015 losses, CCD is not mentioned.

On this page:

- Discovering a Problem
- Dead Bees Don’t Necessarily Mean CCD
- Why It’s Happening
- What Is Being Done
- What EPA is Doing
- For More Information

Discovering a Problem

During the winter of 2006-2007, some beekeepers began to report unusually high losses of 30-90 percent of their hives. As many as 50 percent of all affected colonies demonstrated symptoms inconsistent with any known causes of honey bee death:

- Sudden loss of a colony’s worker bee population with very few dead bees found near the colony.
- The queen and brood (young) remained, and the colonies had relatively abundant honey and pollen reserves.