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## Colony Collapse Disorder (CCD)

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## For today

- World decline of honeybees since the 1970's
- What is colony collapse disorder (CCD)
- A colony collapse event (CCE) – a sensible way of looking at colony collapse
- Threat of colony collapse to honeybees and pollination
- Is colony collapse manageable ?



## World decline of honeybees

Globally, the number of hived honeybee colonies has declined by at least 25% since the 1970's (USDA report)




Much of the world decline in honeybees is attributed to the varroa mite




## Impact of Varroa

- Is held responsible for most of the world decline in hived honeybee colonies since the 1970's
- Has severely reduced feral honeybee populations in every country it has spread to (although there now appears to be some recovery in certain countries)
- Will probably cause further honeybee declines (as it continues to develop resistance to acaricides)
- Has caused a shortage of honeybees for pollination (the US now imports honeybees from Australia for almond pollination)
- Has caused economic hardship for beekeepers (increased production costs by 30%)



## What is colony collapse disorder (CCD)?



## Colony Collapse Disorder (CCD)

The term "Colony Collapse Disorder" or "CCD" was first coined in the United States in February 2007 to describe higher than normal honeybee colony losses over the 2006-07 winter



## Symptoms

- CCD is a phenomenon in which honeybees rapidly disappear from their hives.
- In collapsed colonies, complete absence of adult bees with no or little build up of dead bees inside or in front of hives; capped brood present; honey and bee bread is not robbed by bees and attack by wax moth and small hive beetle is noticeably delayed.
- In actively collapsing colonies, not enough workforce to maintain brood present; only young adult bees and queen present, cluster reluctant to consume provided sugar (carbohydrate) or protein supplement.



## A new name for an old phenomenon ?

"Like so many things there's good and bad news about the phenomenon originally called "Fall dwindle disease," now renamed "colony collapse disorder," or CCD. The bad news is that it appears to be a continuing situation with little short-term solution in the offering. The good news is that it has caught the attention of the press, and is responsible for an increased attention about honey bees and their pollination potential"

*- M. Sanford, Bee Culture, April 2007*




**"Honeybees vanish, leaving crops and beekeepers in peril"**  
- New York Times 29 February 2007



## CCD working group (to investigate the disorder)




### Virus implicated in cause of CCD

- A research paper published in *Science* in 2007 implicated a virus (Israeli acute paralysis virus) as the cause of CCD. The authors suggested that the virus arrived in the US on bees imported from Australia. This claim was contested by Anderson & East in a response to the paper published in *Science* shortly after (IAPV is now recognized as not being responsible for CCD).
- An google search for "colony collapse disorder" on 6 July 2009 generated 398,000 hits whereas a search for "colony collapse disorder Australia" generated 2,020,000 hits.

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### "Colony Collapse Event" (CCE) (A sensible way of looking at colony Collapse)

- The symptoms used to describe CCD also adequately describe symptoms caused by a number of pathogens (e.g. Nosema, viruses, pesticide poisoning, starvation)
- Has Australia had a CCE in recent years ? – YES (several)

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### CCD-like symptoms reported from other countries since 2007

- Belgium
- France
- Spain
- The Netherlands
- Greece
- Italy
- Portugal
- Switzerland
- Germany
- Asia
- South America
- Canada .....

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### Some causes of colony collapse since 2007

- Nosema (Spain, US and Australia)
- Imidacloprids (France & Germany)
- Malnutrition and stress (USA)
- A fungus (USA)
- PMS caused by varroa (UK and USA)
- A new virus (Dr Bromenshenk, USA)

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### Threat to honeybees and pollination

The jury is still out on colony collapse, but it appears as though it does not present a long-term problem for beekeepers or pollination services

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## Is colony collapse manageable ?

In short – YES

*Less collapses were reported during the previous winter, and those that were observed in Australia in the winter of 2007 have not reappeared.*

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## Thank you - questions ?

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