



## Finally, A Complete Description Of Colony Collapse Disorder Across Time and Location.

Jerry Bromenshenk has been involved with Colony Collapse Disorder from the very beginning. He and his colleagues at the University of Montana, the U.S Army's Edgewood Chemical and Biological Center, his own company called Bee Alert Technology, and BVS, Inc. have ferreted out an amazing amount of information on this Disorder and are close to understanding the answers to this problem. Because of their work the beekeeping community is more aware of the best management practices over time to combat the worst of the regular pests and diseases bees have, and this year the almond orchards should have an ample supply of bees for pollination, in part due to their efforts, and of course the work of many other researchers and scientists. Of course it's only late December and bees are fickle, fragile creatures...and in bee time, it's a long way to February.

Over the two years that Colony Collapse Disorder has been a recognized problem, this group has probably visited more beeyards suffering from CCD, in more locations, and over a longer a time than most of the people involved in this search. As a result, in a full report prepared by this team to be released in the February issue of *Bee Culture* magazine, Bee Alert's Scott Debnam and Jerry Bromenshenk from Missoula Montana, David Westerveld from Florida's Apiary Inspections Bureau, and Randy Oliver, a commercial beekeeper with significant honey bee research experience from Grass Valley, California detail the symptoms of CCD with respect to where it hits, and when it hits. This information is critical in making a diagnosis as symptoms do change as seasons progress and knowing what to look for and when to look for it is absolutely necessary in making correct decisions. So far, no better guidelines exist for diagnosing this disorder.

To review what's commonly known:

The symptoms of the final stages of CCD have been oft repeated:

### In collapsed colonies

- Complete absence of older adult bees in colonies, with few or no dead bees in the colony, on the bottom board, in front of the colony, or in the beeyard.
- Presence of capped brood in colonies during time of year when queen should be laying.
- Presence of food stores, both honey and pollen, unless a drought or time of year restricts availability of food resources.
- Absence of pest insects such as wax moth and hive beetle.
- Lack of robbing by other bees
- Robbing and return of hive pests is delayed by days or weeks.

### In collapsing colonies

- Too few worker bees to maintain brood that is present.
- Remaining bee population predominately young bees.
- Queen is present.
- Queen may lay more eggs than can be maintained by workers, or is appropriate for the time of year.
- Cluster is reluctant to consume supplemental food such as sugar syrup and pollen supplement.

However, these are the terminal symptoms. By the time colonies reach this point it is far too late to do anything but bury the dead. Being able to spot colonies that are just becoming affected is a real plus because beekeepers can turn them around most times and keep them productive. Even though they still don't know the cause, proper and appropriate management techniques go a long way in helping. Here's what the team has found:

#### One year out:

Colonies are "just not doing well" with few other visible symptoms. They seem healthy, but have lackluster honey production.

Six months out: Symptoms are vague and easily missed. Monthly inspections and careful comparisons are needed. Brood nests are slow to expand, with most in a single hive body. Mid-day inspections show bees dispersed in the colony, but this varies. Population growth slows to stops during growing season when compared to other colonies in the same yard. Honey stores remain untouched, bees are feeding on nectar recently collected. These symptoms are

These symptoms are difficult to spot due to the careful comparisons needed.

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Three months out:

CCD colonies appear slow to grow and are outpaced by non-CCD colonies in the apiary. There is a noticeable population decrease going from 3 to 2 boxes, or 2 to 1, and often the bees are on only a few frames in the bottom box...and they appear restless. Brood is shot gunned because of dead brood removal, and honey stores begin to diminish if it's late in the season, but if early, the honey remains untouched. Routine maintenance goes undone and no propolis seals are noticeable.

One month out:

Usually 8 frames of bees or fewer remain and they decline rapidly. Brood is produced, but can't be supported, queen replacement is often tried and abandoned brood is common. Stored honey depends on the season...in summer it may all be depleted, in winter untouched.

Finally:

Remaining bees fail to eat supplied food or medications, and it's mostly young bees that remain now, as the older bees are gone. Queens continue to lay excessively, and the colony usually lacks any aggressiveness at all.

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### **Visual symptoms of a CCD Colony**

- 1. Just days before its collapse the colony seemed to be strong and fully functional**
- 2. Mostly young bees remaining in the hive**
- 3. Bees are not aggressive**
- 4. Queen is present**
- 5. Eggs are present**
- 6. Full frames of brood may be present**
- 7. Brood may show signs of “shotgun” pattern**
- 8. Capped honey and fresh nectar are often present, although not in summer collapses, which are uncommon**
- 9. Fresh pollen has been stored in the hive recently, if external resources are available**
- 10. Supplemental feed (syrup and extender patties) if supplied, are ignored**
- 11. No robbing occurs**
- 12. No secondary pests (small hive beetles, wax moths or ants) are found**
- 13. No dead bees are noted around entrance of the hive**
- 14. Bees do not show any signs of winglessness, paralysis or other adult bee diseases.**

**CCD tends to travel like a wave through a beeyard, and combining affected and unaffected colonies usually gives 2 dead colonies. Adding a package may help, and may not. There is a time until secondary pests will move in...using equipment before that time for more bees is risky and the colony may die again.**

**The Cause of Colony Collapse Disorder remains unknown, but the diagnosis, and thus the opportunity to administer remedial treatments is getting better all the time.**

**For the full article with additional information see the February issue of *Bee Culture* on our web site [www.BeeCulture.com](http://www.BeeCulture.com) after Feb 1.**

**Thanks to Scott, David, Jerry and Randy.**

**This message brought to you by *Bee Culture*, The Magazine Of American  
Beekeeping.**

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Happy New Year to Everyone from Buzzword. Let us stiffen our sinews and summon up the blood for another year of beekeeping. Let us keep our spirits high, do everything we can to enable our bees to at least survive, and if they produce some honey, it will be a bonus.

Sincere thanks to Ian Jamieson for the article on Colony Collapse Disorder, and to his suggestions for additional books for the library which will be published later, and to Joyce Duncan for the interesting article on research into the brain of the honeybee.

Beginners talks begin on 25th. February in Doonfoot Primary; the first Introductory talk will be given by Tony our new President. More details to follow.

The Summer shows to date are;

Neilston 2nd May

Ayr Show 9th and 10th May.

Gardening Scotland 29th., 30th., and 31st. May.

Flower Show 6th.—9th. August.

Highland Show—if people wish to help out only.

Others to be decided.

Volunteers are needed on Saturday 31st January to do some clearing up at the Association Apiary please. Come along at 10am to cut down some trees, lop off bramble branches and move some hives. Bring a packed lunch and hope for a decent day. In any event it will be really good to see people again after the Christmas break.



## **Graeme Sharpe's Talk on Swarm Prevention and Control, and Making Increase.**

Graeme commenced his talk with a reprise of 2008 which started off with a good spring, but had the worst summer for Queen mating which requires a temperature of 20C. There was very poor forage, however the honey crop over the year was average as the end of July was fine. Taking the bees to the heather in Glenapp Valley resulted in a poor crop.

SWARM CONTROL AND MANAGEMENT - this has several points to be considered:

- Time of Year. From May to July is Beekeepers busiest time. Look out for Queen Cells.
- Space. Bees require a high surface area for nectar, and single broods are prone to congestion resulting in Queen pheromone having difficulty in dispersing throughout the hive. Congestion also results in less space for fresh eggs.
- Age. Older Queens produce less Queen Substance.
- Lack of Queen Substance. Requeening is very important and should be carried out every year or two as Queen substance halves every year.
- Swarming Tendency. Select those which are less likely to swarm.

**Swarm Prevention** is when the Beekeeper prevents Queen Cells

**Swarm Control** happens once swarm preparation has been started by the bees.

## IMPORTANT MANAGEMENT TOOLS

1. 9 day Inspection.
2. Record Keeping
3. Clipped and Marked Queen—best done in April when bees out flying.
4. Demaree
5. Nucleus
6. Be organised and work to a programme

**Keeping records is very important** and may include details of the following

1. Frames
2. Food
3. Has Queen been seen
4. Supers added
5. Any other relevant remarks.

Sometimes the hive can have too much food and the Queen can't expand. Check in April. You may need to remove a frame or two of sealed stores. These can be used for nucs.

Demaree in May or June.

Making Increase : Swarm raised Queen Cells are a good idea if from a good colony. Use combined with 8-9 day inspections . Wait till Queen cells built. Transfer comb with single Queen cell to Queenless colony or mating nuc. Remove bees and brood from strong colony. Nuc must be fed, this encourages virgin Queen to mate. Leave for four weeks. After four weeks check to see if eggs are present or Queen not mated. Once mated transfer to brood hive and feed. Top feeder or Frame feeder.

Other Methods:

- Grafting by hand.
- Vince Cook Ring.
- Cupkit Queen Rearing method.
- Lazy days Hopkins method.
- Queen Introduction.

Complete and full details of most of these methods can be found in the Association Library collection of Beekeeping books.

Graeme gave an enthusiastic and very comprehensive talk on a complex subject. Those present felt that he must be invited back to give members further opportunity to benefit from his experience.

## Honeybees and Cocaine.

Research is being carried out at the Department of Brain Behaviour and Evolution at Macquarie University in Sydney by Dr. Andrew Barron to find out how the brain of the European Honeybee reacts to cocaine, in an attempt to discover a way to stop human addiction. Honeybees, like humans, are strongly motivated by rewards, and Dr. Barron found that bees danced more vigorously in the hive after a dose of cocaine was given than they did when they had found pollen. They also showed signs of withdrawal when the treatment ceased.

## Earthwatch Institute Debate.

The Earthwatch Institute had a debate on 20th November (Buzzword November issue) The subject was which species was the most valuable out of a given list of five. You can listen to the debate by going to the Earthwatch website. I won't give away who won. It was a very entertaining and informative debate.

## PLANTS FOR BEES.

Bees visit flowers to collect nectar and pollen. Pollen contains proteins and fats and large quantities are needed, especially during the spring when many bee larvae are being raised. Nectar contains sugars and is the main energy source for bees. Plants growing in sunny, sheltered places are more likely to be visited by bees than those growing in shaded or windswept situations. Plants grown in clumps or patches are more attractive, some provide only pollen but these are valuable to bees also. Certain trees and shrubs, which in some years may not produce sufficient nectar, are less attractive to bees.

### SOME PLANTS:

**Annual:** Borage, Cosmos, Candytuft, Godetia, Love-in-a-mist, Thistles, Valerian.

**Bulbs and Corms:** Allium species, Crocus Species, Fritillaries, Hyacinth, Snowdrops

**Trees and Shrubs:** Apple, Brooms, Clematis, Cotoneaster, Escallonia, Fuchsia, Hazel, Heather, Holy.

**Herbaceous Perennials:** Alyssum species, Cranesbill, Geum, Hellebores, Lambs' ears, Oriental Poppy, Salvia, Thrift, Verbena.

**Wild Flowers:** Clovers, Dandelion, Hemp agrimony, Lesser celandine, Poppies, Rose Bay Willowherb, Teasel,

### Further Reading

Hooper, T & M Taylor (1988) *The Beekeeper's Garden*. Alpha Books Ltd.

Howes, F.N (1979) *Plants and Beekeeping*. Faber and Faber.

**The Royal Horticultural Society - Biodiversity - Plants for Bees. 2008.**