## **Dead Colony Forensics** by Dewey M. Caron

Dead colony forensics - examining a dead colony to help determine what might have been the reason for non-survival. Identifying the problem can guide changes in management leading to improved overwintering success. Last year backyard OR beekeepers lost 43% of their overwintering colonies – there were additional losses during the active year resulting in approximately one of every two colonies not surviving over a full year period. The most likely reasons backyard beekeepers lose colonies overwinter are: too weak, starvation and/or mites. Large-scale beekeepers have 3 different reasons: varroa mites, CCD, and pesticides, and generally lose many fewer (by at least ½) overwintering colonies.

Bee forensics is an imprecise science. The reason a colony fails may not always be obvious. Assessing the forensics (Reading a dead colony) is designed to eliminate some possibilities resulting in a possible conclusion of one or a couple of likely reasons. Armed with this knowledge, we can then design how to improve survival in a subsequent season.

I hope you are finding full survival this winter. If however you do lose one or more colonies, this self-questionnaire is designed to help you figure out why your colony died. It has three parts. You need simply answer YES or NO to questions in each section, for each dead colony, and sum your responses.

**PART 1 Could your colony have been too weak to survive the winter in OR?**

1. Was your colony started as a split/divide or Nuc? __ YES or NO
2. Was colony established on foundation frames before-April 15? ____ YES or NO
3. Was newly established colony fed at installation and at least 3 more times? ___ Y/N
4. Were there at least 12 fully draw comb frames in BOTH brood boxes? _____ Y/N
5. Are you confident the colony never had developing queen cells? ___ Y/N
6. Colony was still alive in January?____ Y/N

**PART 2. Could your colony have starved?**

7. Was any honey/possibly too much honey harvested from colony? ____ YES/NO
8. Was colony fed sugar syrup a minimum of 3 times after September 1st? ____ YES/NO
9. Did dead colony have (evidence) of more than 4 frames at least half full of capped honey? ___ Y/N
10. Colony was still alive mid-February? _____ Y/N

**PART 3. Could mites (& associated viruses) have been reason colony died?**

11. Was colony still alive end of February? ___YES/NO
12. Was colony in Langstroth boxes and you used a Screen bottom board? ____ YES/NO

13. Did you sample for varroa mites at least monthly in August, September and October? ____ Y/N
14. Did you seek to control mites with drone brood trap or brood interruption? ___ Y/N
15. Did you use Amitraz (Apivar) strips, continuously in Brood Nest for a 42 days? ____ Y/N
16. Did you use an essential oil treatment (Apiguard or ApiLife Var) minimum of 21 days? ___ Y/N
17. Did you use formic acid (MAQS ) for a 7-day treatment or oxalic acid after Nov 1? ____ Y/N


If 3+ NO responses in **PART 1,** colony could have died from weakness &/or lack of proper initial care. You should find a handful or more of dead bees on the bottom board &/or a small dead cluster with bees head-first into cells around a small patch of dead capped brood located on one of the brood combs. Queen failure might be diagnosed as remains of queen cells or capped drone cells in worker-sized cells.

If 3+ NO responses in **PART 2,** your colony could have died from lack of adequate stores. You might find the honey was robbed by bees from another colony (evidence is bits and pieces of light wax scattered within cells and on bottom board), torn edges of cells that had might have contained honey and find a dead cluster (handful or so of bees with many single bees head-first into cells around a patch of capped brood cells, that may have punctures in their capping).

If 4+ NO responses in **PART 3,** your colony likely died from mites (BEE PMS). You may or may not see dead bees on the bottom board but not likely to see a cluster of dead bees with bees head-first into the cells. There will most likely be scattered capped brood cells, many with holes in the cappings. Looking into former brood cells, you might note a bright white "stain" on upper cell wall (mite guano).

If you found that all 3 of these might likely be the reason of a dead colony, then the MOST LIKELY reason is mites (**PART 3**), especially if you answered NO to question 12, nor did any control (questions 13-17).