



Why did my bees die this winter?

A Dead-out Clinic
sponsored by

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Intrinsic factors affecting survival

- Pre-existing conditions
 - Too many mites (#1 stressor)
 - Parasitic mite syndrome
 - Brood disease
 - Weak colony or “dink”
- Non-adaptive behavior relative to winter in the Northeast weather conditions
 - For instance, failure to reduce size of brood nest and remove drones in fall
 - Failure to arrange winter stores appropriately
 - Failure to adequately propolize the hive (“seal up the cracks”)



Varroa destructor, female (l) and male

Extrinsic factors affecting survival

- Winter weather
 - Length of confinement without cleansing flights
 - Average monthly temperatures
 - Wind and wind chill
- Hive location and condition
- Inadequate honey stores (not usually the bees' fault!)



By examining dead hives in the spring, we can learn:

- Did the bees have enough stores?
 - (Should I have fed them late in the season?)
- Were the bees properly winterized?
 - (Did I choose a poor location or provide the wrong equipment?)
- Were the bees healthy going into winter?
 - (Did I monitor mites and other diseases last fall?)
- Was the problem beyond my control?
 - (Tree fell on the hive, bear showed up, etc.)

Accurate diagnosis depends on careful observation. Notice all the clues!



Use the NYBeeWellness “Diagnosis Key” to help so that you follow the most important clues.

The Plan for Today:

- We'll start by trying out the diagnosis key together. We have photos of a deadout in Jefferson County, wrapped combs, notes taken on that hive from the logbook, and bees in baggies.
- Later, we'll look at some photos of YOUR deadouts and you can apply the key to those.
- Then we'll spend some time with the bees in baggies and the combs: What symptoms do the bees have? What is the condition of the brood combs?
- We'll conclude by sharing the analysis for each deadout....

why did those bees die?

This is Hive CW6. Beginning at the Diagnosis Key, Question 1:

1. What do you see around the entrance of the hive?



There is very little spotting or smearing at the entrance, and there are almost no bees.

The key's best match is "1.b". It says "Nothing. The entrance is clean, or there are only a few dead bees around the entrance. GO TO #3 "



3. What do you see under the inner cover?



CW6 had a feeder left on top. There are some clues there, but we will set the feeder aside for now, and look at the top bars on the top hive body.

Here are the tops of the frames on the box under the feeder.



We see a cluster of dead bees.

Answer "3.b" is:

A cluster of dead bees. GO TO #4

4. Is there honey and bee bread in the hive?

- b. No. *Answer: Your bees starved.*

OK. But now there's more to determine: What is the history of this hive? Why did it starve?

Now you need to check your records!

HIVE NOTES:

CW6 originated as a Georgia package installed on May 11 2013.

Queen was not released in timely fashion (queen cage fell to bottom of box), on May 26 she was still caged but healthy. She was manually released.

Colony tried to build comb in the feeder, by June 1 hive beetles were observed.

By June 23, 10-frame deep was crowded with bees and queen excluder plus comb super was added.

July 10, bees were working super but cranky.

August 6, took off one super comb honey.

August 17, Good brood but not much honey coming in.

August 28, Bees touchy although plenty of honey.

ApiLifeVar applied. LOADS of hive beetles!!! Brood looks OK and is mostly sealed.

- Sept. 17 Bees starving. Took 2 gallons 2:1 syrup in two days. Kept feeding, total more than 6 gallons. Lots of dead bees at front of hive. Lots of brood, lots of bees in hive, and still many, many hive beetles. Second treatment with ApiLifeVar. Examined bees for Nosema. None found.
- Continued feeding hive until too cold for bees to take feed. Left feeder in place with an extra gallon syrup.
- Winterized hive.
- Dead by early January.

CW6, lower box, top bars, note the hive beetles.





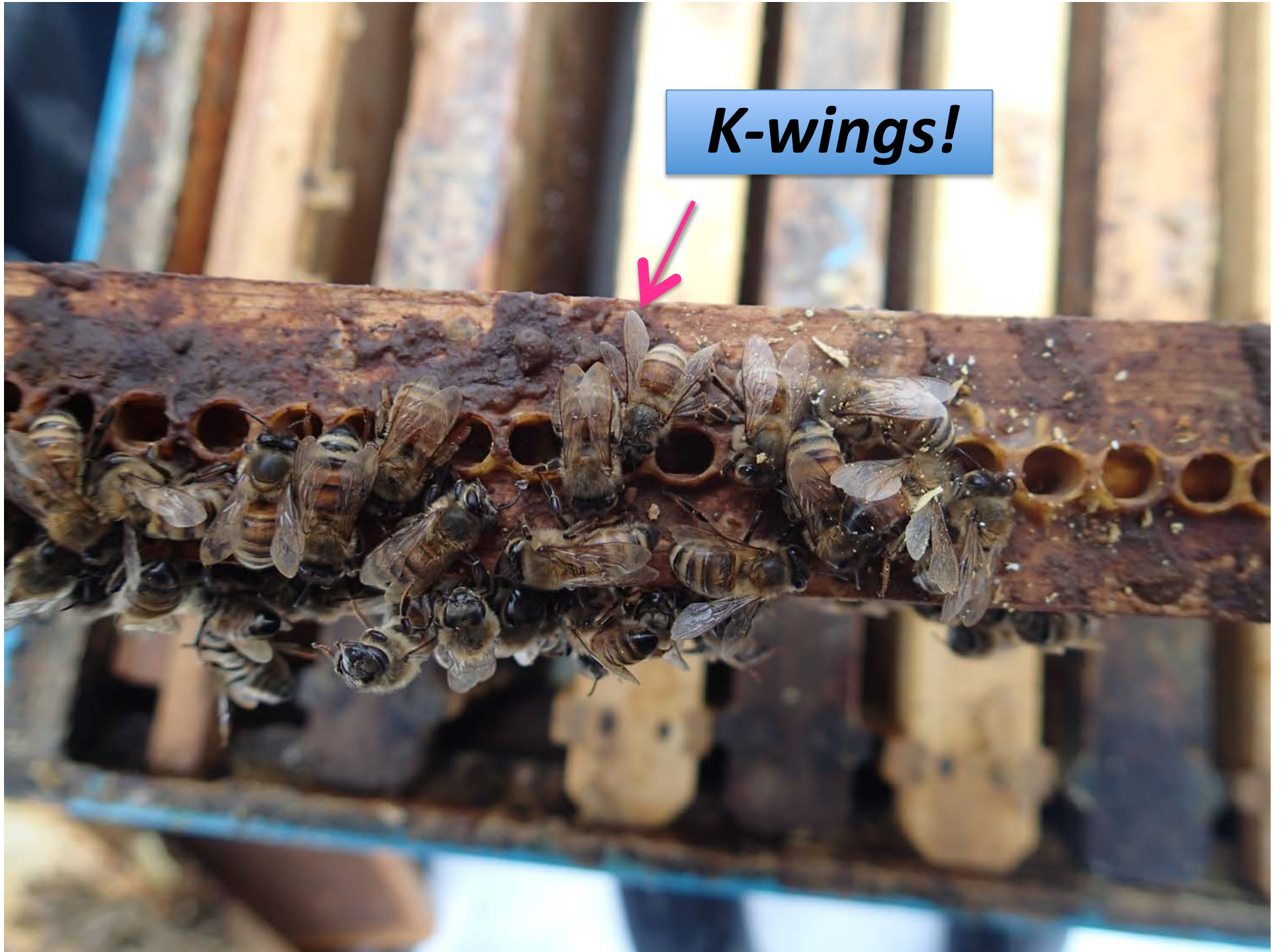
Hive Beetles

- These pests are serious in the South.
- However, here in the North, they can be useful indicators, for the following reasons:
 - Prior to 2014, HB have not been able to build up enough numbers in our climate to overwhelm healthy hives like they can, and do, in the South.
 - HB can smell trouble. They will gang up on a weak hive.
 - If a lot of HB appear in one of your hives, that hive is in distress. The HB know it and their presence is a red flag. Look for the source of the trouble!

So what **really** killed CW6?

- Pay close attention to everything you see in the hive as you take it apart.
- Save some bees and examine them.

K-wings!



The presence of numerous bees with K-wings is a sign of viral disease.

It may also signal a tracheal mite infestation.

These bees had neither of the other major symptoms of tracheal mite infections.

- small cluster
- bees don't fly

Virus infection is a distinct possibility.

There was a feeder left on this hive.
Notice the brown spotting on it.



This is fecal matter. When bees defecate within the hive, they are sick.

Final analysis of CW6

- The bees showed no signs of excessive mite load (drone brood exam), and were treated appropriately for Varroa throughout the summer, beginning when the colony had built up enough to yield a super of honey.
- There was a heavy carpet of dead bees in front of the hive beginning in August and lasting until frost.
- The bees were defensive and consumed huge quantities of feed starting in late August (> 6 gallons!) without storing much. There were 8-10 frames full of bees in October.
- The bees were examined for late-season Nosema, none was found.
- The bees defecated in the hive.

CONCLUSION: These bees died of a viral disease.

Can we confirm this?

VIRAL TESTING OF DEAD BEES. \$\$\$

Most bee colonies have several viruses.

Knowing the viral titer (load) may be helpful. But we don't know what the "tipping point" of infection is.

Some are "subclinical" infections.

Most tests can't tell us which specific virus is causing the problem.

For a good discussion of this dilemma, see:

[http://www.beediseases.host-ed.me/Bee_diseases/
Virus_diagnostic.html](http://www.beediseases.host-ed.me/Bee_diseases/Virus_diagnostic.html)

What could have been done differently?

Start right away with mite drop counts. Don't assume package bees have the advantage of "brood cycle breaks".

We can't treat viruses.

"Ride them out"

"Feed, feed, feed"

Combining colonies is NOT a good idea if you suspect a virus infection.

Now let's look at some of YOUR deadout pictures!



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