

## ***Apis m. Esoteria 8***

### **Spring die off**

### **Startling fact??**

Sometimes you hear something and you just go, Humm! I am not thinking of starting a new style musical career. In a “bee school” (That is the gospel truth, right) I heard that the bees do not maintain the temperature inside the hive at about 92-95 degrees, summer and winter. You talk about “knock your bee suit off “startling. Really, I don’t get too concerned about precise facts in the beehive. There is very little exactness in nature. I get along better with a range of numbers. So, what I heard was that the bee cluster maintains about 72° F inside the cluster in the coldest of winter. The inside of the hive, outside the cluster temperature is the same as the ambient air temperature outside of the hive. Say, maybe -20 °F. So after I got up off the floor, dusted the pollen off and got back to thinking, I said,” Sure”. Think about the insulating effect of 7/8 inch of wood, with a slit in the front, and maybe a screen for the bottom. There possibly is some insulating effect of the honeycomb full of honey and pollen, but?? There is a 3/8 in. gap between each frame, so you only benefit from insulation where bee bodies contact the comb. At best there is only 1” of full comb. Thermal dynamics dictate that heat goes from higher to lower, so the cluster is constantly losing heat instead of holding heat. Therefore, the bees must constantly create more heat through energy exertion, quivering their wing muscles. At about 40°F the bees can lapse into a comatose state. Okay, how do they fly in the snow and sub 50 degrees. Anyone ever observed that? Closer to reality may be that the center of the bee cluster is close to 72°F when there is no brood present. The bees will change places moving to the center as their body temperature gets down toward 40° (but not at 40° yet). Then, when the bees don’t have the energy and enough bees to create the 72°F environment in the center of the small cluster it succumbs to the temperature, goes comatose, and can’t feed anymore. When we open hive of the dead colony, we see bees that appear to have starved to death but are within 2” of honey. They were too cold to move to the honey, but alive enough to get their heads into the cell in front of them to see if there was any honey left.

Now, when the queen wakes up and starts laying eggs, the brood must be kept at 92-95 degrees. The nurse bees go into a feeding frenzy consuming honey and shivering to generate the heat. Food stores are depleted faster in two ways. One is to create the energy for warmth, the other is the food necessary to feed the young larvae and pollen to feed the nurse bees. Lucky us, this occurs during an abnormal warm spell in the early spring. There is little nectar or pollen for the foraging bees to bring in and replace the stores. The

temperature drops again for a “long” period of time (more than overnight). The cluster forms back up, the brood chills and dies, and if the cold period is long enough the cluster starves to death. No food found within 2” of the dead cluster and a lot more dead bees found in the bottom of the hive as the outer layer of the cluster died off first.

The discovery of "fat bodies" in the honeybee may cause the beekeepers to change their fall/winter feeding habits. We traditionally have fed syrup in the Fall, early Winter, and then in the Spring. Pollen patties were only fed when brooding started to help fire up the colony. Now pollen may be a standard feed right along with syrup. Not just for brood production, but to create a healthier bee.

Preserved research honeybees have been found to carry the viruses found today in live bees with mites. So maybe the varroa mite vectors the virus to the bee while simultaneously weakens it. Then the virus kills the bee. If the bee were metabolically stronger it could withstand the degradation from the mite. Us humans carry Staph, Strep, and MRSA in us all the time and don't even notice until our health is compromised by illness or surgery. Then we get laid low.

Varroa mites are injecting a solvent into the "fat bodies" of the honeybee and then sucking the liquid fat out for their own nutrient. Pre-varroa the honeybee had enough stored fat for the late winter period when there was no pollen to collect and all the stored pollen (bee bread) was consumed. The bees would start consuming the fat stored in their bodies, giving them just enough energy to survive until the first weeds started to bloom. Now that the varroa is consuming some of that stored fat the bee starves to death before the blooming period starts.

It appears the honeybees need two components to their winter-feeding program in areas that have a winter similar to the mountains of Northeast Georgia. That would be sugar water syrup and pollen. I prefer powdered pollen versus patties.

Would this contribute to what I call “February, the mysterious die off month”?