STAHLMAN BEEKEEPING NOTES FOR 2023

Issue # 41 October 28,

No matter where bees are kept, the "winter bee nest/winter cluster" is important for a hives survival in winter. I visited with one of my 2nd year beekeepers [Lynn Murray] whom I mentored last year.

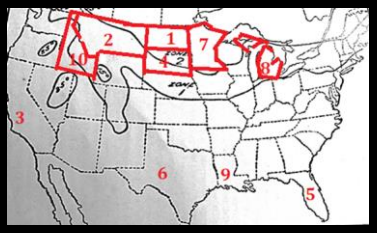
The pictures I took will illustrate a point I try to make to those looking for pre-winter survival techniques.

- **Take care of your bees. They require frequent hive inspections.**
- **Evaluate and treat for any problems that show up in the brood nest. This would include evaluating the amount of brood in the brood nest, treating for small hive beetles, and Varroa mites.**
- **Feed after the honey flow and honey harvest. Bees need to replace some of the honey stores taken from them. Bee populations needs food and larvae need food. Shortage of food results in rapid population decline when a hive should be producing bees well nourished for fall/winter survival. Poorly bred queens do little to help produce the number of bees required for winter survival. Replace them as soon as a problem is spotted.**

I took the following pictures of Lynn Murray's hives two weeks ago. Lynn uses a deep 8 frame hive body for the brood chamber and two medium 8 frame supers above it full of honey for the winter season. The queen is not confined to the bottom box by a queen excluder.

Lynn's beeyard has a windbreak of mature trees. It has a small stream flowing a short distance away. It is located within the city limits of Raleigh not far from RDU (the airport).

IMPORTANT POINTS



The most honey produced in the U.S. comes from six states in the upper cold regions. Ranked in order of honey produced in 2018 (the latest figures I could find) are: (1) North Dakota (2) Montana (3) California (4) South Dakota (5) Florida (6) Texas (7) Minnesota (8) Michigan (9) Louisiana and (10) Idaho.

Also notice that the other four honey producing states are in warm areas of California, Florida, Texas and Louisiana.

Back to the information I began last week on some facts about beekeeping.

- Colonies survive well during a severe winter if they are strong in October!
- Young bees during the winter season are the key to a hive wintering until the queen begins to lay eggs again.
- Drones -- A good strong hive of bees will not have any drones by fall.

As she inspected her bees, she found some capped brood in the medium supers on the hives – no eggs. She found honey (capped and uncapped) in frames near the side-walls of supers. We hefted all hives and they were all about equal. Feeding for any of the hives was not required.

It is a good sign when a hive is loaded with a large bee population. The bees shown in the picture to the right were in greater numbers – we used smoke to inspect the hive.

Photo # 3 This is a frame removed from a bottom box. We did find frames with capped brood but many cells were empty. I might add that this is good because the open cells are available for bees to cluster in during very cold weather. Typical of the four hives; top supers were full of honey and swifter strips were placed on the tops of frames to catch a few small hive beetles we saw. Swifter strips have worked well for her SHB issues.

This photo shows small hive beetles caught in the swifter strips.

All four hives that Lynn manages are well prepared for winter. All have a laying queen – we checked them for brood – egg laying is very low. Young bees look plentiful and healthy. Lynn has followed a regular schedule for mite treatment and fall feeding. The natural winter cluster/nest is well established. Honey surplus is above and to the side of the winter cluster. The bee yard location is protected from strong winds. There is no guarantee that all hives will survive the winter season, but my observation is they will have a pretty good chance to make it to spring.

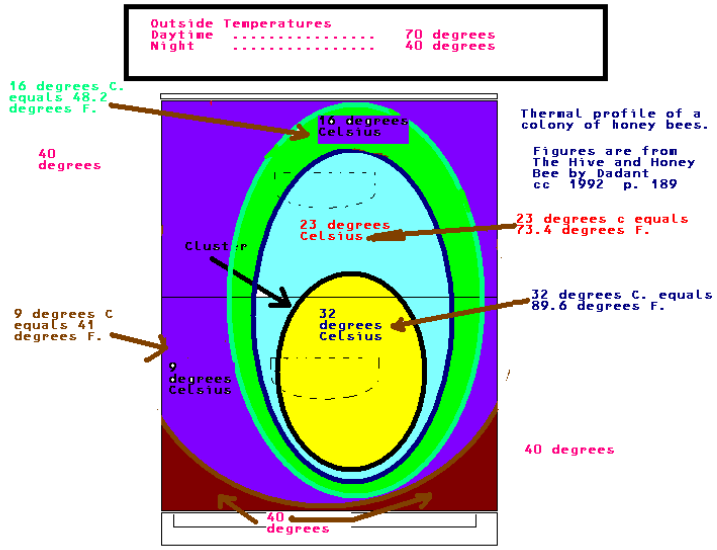
Let me share some thoughts about open cells in the brood chamber.

Bees survive because they have dry winter quarters, saved honey for the winter season in the correct location (above and around the winter cluster), and have hardy good hygenic queens that produced strong healthy young bees for the winter ahead.

A winter Cluster diagram:

Taken from 2021 Issue # 48 and Beekeeping 101, 201 & 301 lessons in beekeeping I published from 2001 thru 2019.

Honeybees do not heat the interior of a hive. Cold air moves in and out of a hive. The bees gather into a ball shaped cluster called the bee nest.



This nest expands and contracts during the winter season depending on outside air temperatures.

The nest temperature is regulated by bees. The center of the cluster is warm enough to permit brood rearing temperatures of 92°F when the queen begins laying eggs often when new food supplies become available. As outside temperatures get colder the nest is tightly packed as shown by the color yellow. Heat produced by muscle action of worker bees is contained within the cluster – protected by a outer layer of bees tightly gathered to provide insulation against heat loss. Honeybees do exchange positions. The winter cluster is in constant flux – some bees moving all the time.

Bees react to warm weather by expanding the cluster. Some bees become active and may seek to move toward an entrance. If air temperatures reach the low 50's, bee may be seen at the entrance to the hive and some may fly.

It is interesting to me to see the difference in the amount of honey stores a colony may require during the winter season. Bees kept in northern regions use less honey stores than the bees located where they can fly often from the hive during the winter season. I have observed eggs in my hives here in Raleigh as early as Christmas day. In Ohio, I did not see eggs until late January or early February. Thus, when a book or someone states that a hive requires 60 pounds of honey reserves (an often quoted figure) it may be less or more depending on the activity within the bee cluster.

Honeybee clusters do move up during the winter season. This is natural because heat rises and the honeybees store honey above brood. I have seen and many of you may have seen bees starve to death that still had plenty of honey stores in a hive.

This illustration is found in Honeybee Ecology "A Study of Adaptation in Social life" by Thomas Seeley. It is a drawing published in 1971 from research by C.D. Owen's Technical Bulletin 1429, United States Department of Agriculture.

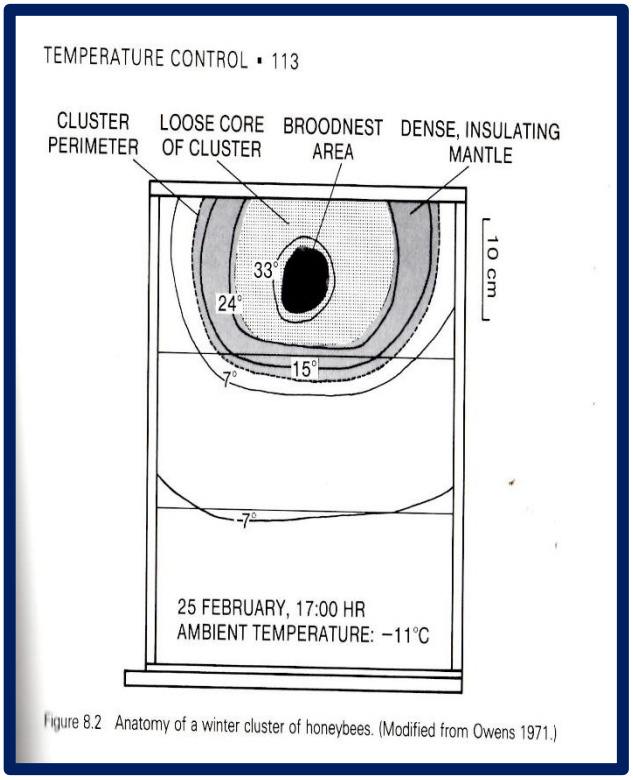
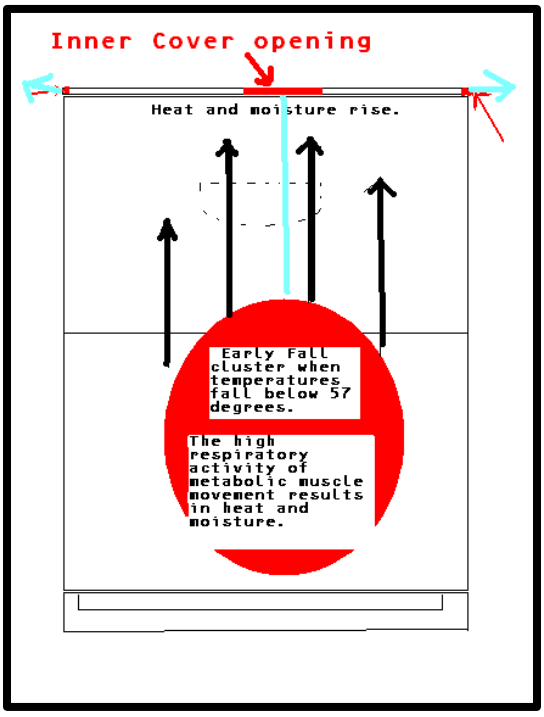


Figure 8.2 Anatomy of a winter cluster of honeybees. (Modified from Owens 1971.)

It shows a cross section of a honeybee cluster in February. It illustrates the temperature range within a cluster. This illustration shows a black area--the brood nest where brood is being raised.

Note the dense insulating mantle of bees protecting and insulating against heat loss. Any time one examines a hive of bees in cold weather great harm can be done if this natural cluster is broken by pulling frames from the hive. If one is thinking about placing a frame of honey down into this cluster, the frame should be placed against the dense insulating mantle of bees. Placing a frame of honey directly into the center of a cluster destroys the natural ability of the bees to maintain uniform heat throughout the cluster.



Beekeepers should not add moisture to the hive.

Winter feeding is done – not to encourage brood production but provide food for winter survival.

Sugar to water mixtures should be 2 part sugar to 1 part water.

Food provided to honeybees during the winter season should be placed above the winter cluster. See the diagram showing heat rising. Honeybees at this time of the year are found mostly in the lower part of a hive or in an oval shaped nest directly under the hole in the inner cover.

.

This is not the time to do frame manipulations. The bees have every thing organized as they want it.

This is a picture showing two frames removed fron one of Lynn's hives. (Outside air temp. 65°F) This is the heart of a honeybee cluster/nest. All the brood is located in this area. The queen will stop laying eggs entirely when cold weather begins.

Empty cells located where bees have emerged become useful for adult bees to occupy when the weather turns cold. I have noticed over the years that the cluster seems to move forward and upward over the entrance to the hive. Honey in outside frames is often too far away from the cluster in cold weather.

I will follow this article up with feeding during the winter season. Place honey above or next to frames with bees. Do not break up the winter cluster. By the way, the top cover and inner cover can be removed from a hive in cold weather for a very short time to check on the brood nest and add food.