

STAHLMAN BEEKEEPING

NOTES FOR 2023

Issue # 10 Swarming Issues Part I March 11, 2023

Each season in beekeeping reveals some outstanding facts. There are no two beekeeping seasons exactly alike. We have had a mild winter in Raleigh with trees and shrubs blooming two to three weeks earlier than normal.

Swarming season is on us now! Those readers further north will also see an earlier swarming season.

There is no 100% sure way to stop a powerful colony from dividing naturally. Last week I shared information about artificial increases. This week's topic shifts to the natural instinct of bees to swarm. Swarming is a strong instinct and is caused for the most part by a congested brood nest. Bee management requires frequent inspections of hives to recognize the conditions within the hive that indicate conditions are favorable for swarming especially now!

Swarm prevention has been a common topic in bee magazines and several books have been written about the subject.

I like'n a swarm to music beginning with a waltz that suddenly becomes "Star Wars!" I am not sure how many of my readers have watched a colony of bees at the very moment bees rush out of the hive. It is inspiring with loud buzzing, bees filling the air, forming a cloud, and departing. Within minutes the hive returns to business as usual. Well not exactly usual but usual as far as the bees are concerned – they are about to get a new queen, go thru a brood break, take advantage of all the construction work and honey saved by the previous occupants.



This is the inside of a natural nest of honeybees. At some point in the past, a scout bee and then other scout bees located this tree as a possible new home.

After a year or two, the nest grew in size and now the bees have no room to expand. Instinct kicks in! I would highly recommend reading "Honeybee Democracy" by Thomas Seeley. His

IMPORTANT POINTS

The rhythm of a hive of bees is an interesting study as seasons change from one to another.

With warm temperatures and plants blooming weeks before they normally do, the rhythm of a hive will match the rhythm of weather events.

Early pollen and nectar flows are stimulating brood rearing and bee populations are growing.

A beekeeper must have an ear to the ground so to speak to determine what needs to be done and when!

Ancient writers of beekeeping make references to and about swarming.

Aristotle indicated that bees about to swarm "make a monotonous and peculiar sound for a few days before a swarm issues."

Virgil wrote "bees filled the air with their humming, as happens once or twice in a summer."

Varro, 116- 27 B.C. wrote" of the 'tanging' of the bees, and throwing dust over them."

research into this remarkable event opens the door to the mystery of why and how the bees carry out the process of swarming.

Swarming:

We are not natural beekeepers for the most part. We are keepers of the bees! We try to manage them to prevent swarming because when a hive swarms, its large labor force is lost.

If we keep a hive to gather a honey crop, the swarm cost can be estimated by the loss of honey that is not gathered. The bees in a swarm are foraging bees that when hived by someone, will build a good amount of wax and gather food necessary to support and get the new hive off to a great start. In my way of thinking "A swarm caught early in the season is far better than a package of bees purchased to start a new hive!"



Cause of swarming:

The conditions within a hive to cause swarming are (1) A colony becomes over-populated for the size of the hive and (2) insufficient ventilation -- causing bees to cluster outside the hive. It is also known that without any apparent reason, bees swarm in spite of all efforts to stop them.

Honeybees begin to raise drones as their population grows. This is the first sign that a colony may be getting ready to swarm. The next indication is the creation of embryo queen cell cups followed shortly with the queen laying eggs in them and the larvae fed lavishly with royal jelly. At this time, scout bees are out looking for a new home. In my experience, the bees and old queen swarm (leave the hive) before the new virgin queens begin to emerge. Some report this could be up to four days before new queens emerge from their cells. The timing is usually late morning on a sunny day – it might be delayed with bad weather.

Swarm prevention begins with frequent hive inspections:

- Inspections must be carried out on a regular schedule.
- Knowledge of honeybee biology is important
- Understanding the signs of swarming is important
- Swarm prevention requires additional hive equipment
- To quote Richard E. Bonney "A competent beekeeper would never allow swarming, **so they think.**"

Swarm control falls into two phases: [Early] and [Too late].

It is important to start thinking swarm control very early in the bee season.

Traditionally beekeepers have used techniques like:

- Dividing a colony in early spring (making a split).
- Reversing the hive bodies on a bottom board (assuming a person is keeping bees in two-story hives).
- Adding room for expansion.

Early Control:



It is rather easy to determine the difference between weak hives and strong hives.

In this hive bees are leaving and returning with pollen in a rather steady stream. I could get a more accurate idea of the number of bees flying back to the hive by placing a screen over the entrance. Below is a hive with a screen placed on the hive for 10 seconds. I took a picture and counted the bees.

I counted over 120 bees returning to this hive in 10 sec. 120×6 (10 sec units in a minute) = 1,200 bees in one minute. To get a better idea of what was happening in the colony, I had to open it up and check frames.



In one hour the number of returning bees could be estimated at $60 \times 120 = 7,200$ bee flights into this hive.

Note - I used the term bee flights. A single honeybee can make a number of flights in a day. Some estimates I found indicate flights as short as 15 minutes for a single trip.

This only indicates that the bees are working and bringing in nectar and pollen. I assume the bee population is strong.

Traditionally, a number methods have been used to prevent swarming.

(Some of these methods are mentioned in *Beekeeping - Another "Beekeeping"* by Everett F. Phillips up-dated by John E. Eckert and Frank R. Shaw published in 1960 as a college level text for beekeeping.)

- Clipping the wings of queens! (This does not stop swarming)
- Requeening hives annually. (New queens are less likely to swarm)
- Adding supers to hive. Congested and overheated conditions in a hive lead to swarming.

- Provide larger entrances and stagger supers with upper entrances. Provide increased ventilation.
- Provide shade especially in hot temperatures.
- Reversing the first and second stores on a hive. Usually brood rearing begins in the upper brood box in late winter. By placing the second story beneath the first, the bees have room to expand into the warmest part of the hive and will carry much of any honey from the lower box into the top box. Thus, opening up cells for brood expansion.
- Comb management -- Remove brood comb to be replaced by empty drawn comb or sheets of foundation. Now known as checkerboarding.
- Inspect hive every 7 days to remove queen cells if they exist.
- Avoid the use of queen excluders.
- Use brood frames to equalize other colonies.
- A method used by Demuth was to move a colony about to swarm. A weak colony was placed where the strong was located. The loss of the field force would deter the colony from swarming.
- Another method to reduce the strength of a colony was to shake all the bees from combs in front of a weak hive being sure to leave the queen behind – The younger bees will enter the new colony while most of the older bees will return to their former hive.
- Use only good worker comb in the brood chamber to increase the number of worker cells available for worker brood.

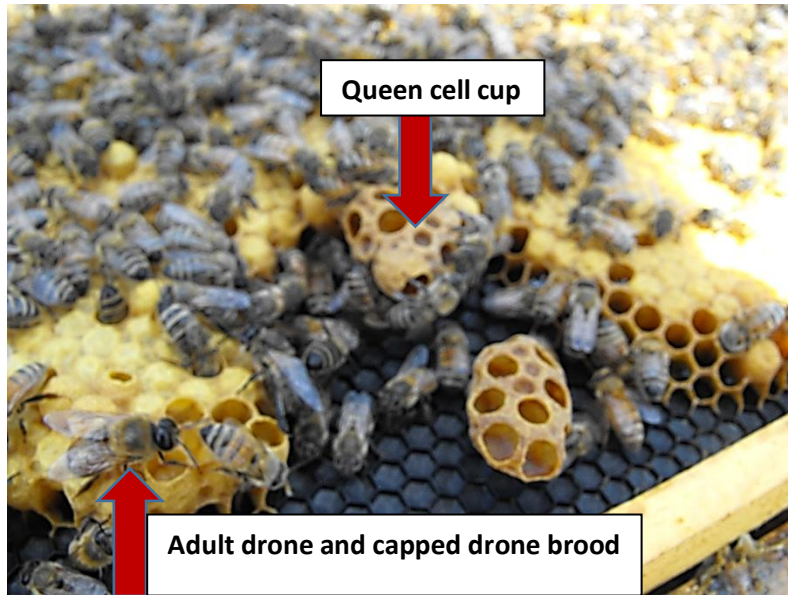
This article is divided into two sections. This section deals with first indications and next week I will cover methods of swarm control – some from the list above.



The appearance of drone cells being built and new comb being drawn out to fill any violations in the bee space rule are obvious signs that something is going on besides a large population of worker bees. Early in the new season drones are not seen on frames removed for inspection. Note this frame.

New wax (burr comb) is being placed near the top bar and along the edge of the end bar. New wax is white or light yellow in color.

The hive will have a large area of capped worker brood. One may see eggs in drone cells but later that comb hanging down on the surface of this frame will be filled with capped drone brood.



The drone and capped drone cells in this photo spell trouble. Also note near the center of the photo the appearance of a new queen cell cup.

This hive has begun the process called swarming.

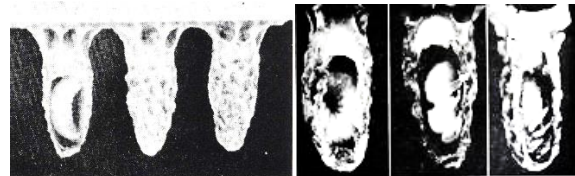
The question is "How soon before the hive swarms?"

It may be as soon as two to three weeks. Remember it takes 16 days for a queen to develop from an egg. It takes drones 21 days to

develop but remember that a drone also requires some time to mature. That period of time is two weeks. Thus bees raise drones before they begin to raise queens.



If queen cells are observed, the time line is down to 7 days or so. To be more exact, the development of the larvae and pupa can narrow the time of the swarm much more accurately.



From page 72 & 73 Queen Rearing by Laidlaw Jr. & Ekert 1962 showing cell development of a queen bee.

A capped queen cell can be cut open to examine the developing queen inside. The age of the developing queen can then be determined exactly based on features that develop. For



example: This queen cell was opened up for examination. The new developing queen clearly has three body parts, legs are easy to identify, the head (mouth parts and eyes) are well developed. Eye color changes from white to dark black and when the wings are developed, the queen is just hours from emerging from her cell.

Swarm Control Part II next week.

