

STAHLMAN BEEKEEPING

NOTES FOR 2023

Issue # 11 Swarming Issues Part II March 18, 2023



The worker cells above the capped brood are filled with nectar/honey. There is no place for the queen to lay eggs. The swarming instinct is most likely started because young worker bees are out of work – normally they would be feeding young larvae but the queen has reduced egg laying because there are few or no open cells. The result is the queen will lay eggs in cell cups built by the bees. Swarm cells look like peanuts.

The goal of swarm prevention is to manage bees so that conditions within a hive such as this are avoided! Check out that statement “the swarming impulse is due to the presence of excess nurse bees and a super abundance of larval food”.

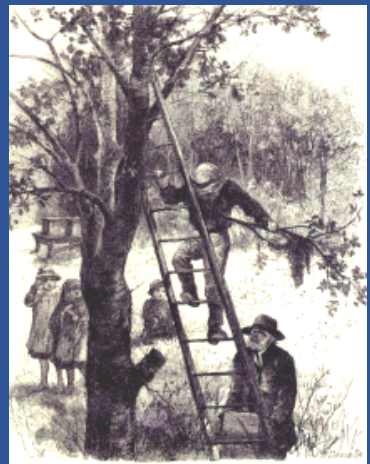
This spring has been mild and bees have had an opportunity to gather pollen and nectar in large quantities. Bees are swarming now! I attended a beekeepers meeting on Tuesday of this week and the question was asked “How many of you have seen swarms!” A good number of hands went up. For those gathering swarms this is good. But the result of a swarm for a person wanting to manage bees to get a honey crop or make splits -- is a lost opportunity.

IMPORTANT POINTS

Well over a hundred years ago, a German investigator Moritz Gerstung earned a PhD in Computational biology at the ETH (University of Zurich) .

He developed a theory that the swarming impulse is due to the presence of excess nurse bees and a super abundance of larval food.

Guess what! I saw my bees yesterday returning to the hive loaded with pollen on their legs. When I opened the hive the bee population and brood area of the hives were full of bees!



It is necessary here to provide a time line and some pictures to show what you may be seeing in your own hive of bees.

The late phase of swarm management: How much time does the beekeeper have to prevent a swarm! For those of you reading this in Ohio and northern states, you still have time!

In the late phase of early spring management, a beekeeper may find it difficult or impossible to prevent bees from swarming.

We know the conditions that cause swarming:

- A lack of room for the bees to expand the brood nest.
- A lack of storage room for nectar and pollen.
- A lack of room for bees to move about the nest.
- Crowded conditions lead to:
 - Insufficient ventilation
 - Higher temperatures
 - A number of young bees in the nest without work to do.

Looking at a hive is not managing a hive! Open inspection of a hive checking frames for certain indicators is managing a hive for all kinds of things – not just swarming.



What are signs that a hive is about to swarm?

This is a close look at a hive with the inner cover just removed.

Issues with the hive in this picture?

- A lot of bees filling the space between frames.
- A big space where a frame most likely was but it was not replaced when removed.
- New comb is now being built in the space between frames.
- Some difficulty is encountered when removing frames for inspection.

And



- Capped drone cells. Adult drones are present!

Drones are required for reproduction. Usually drone cells are begun early by strong colonies of bees. When they are not needed, bees do not feed them and quit raising them. They are forced out of the hive when the winter season arrives.

Queen cell cups are observed:



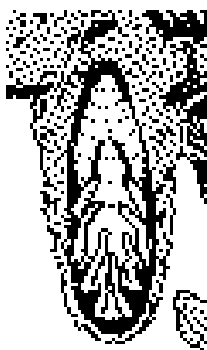
- The most obvious indicator is the presence of queen cells.

I selected this picture because it shows two queen cell cups. One is old – note its color (dark brown and empty). And one is light colored and has a white substance showing in the bottom of the cell. It is the light colored light brown queen cell cup that is of concern to us.

Lets take a look at the biology of queen cell development.

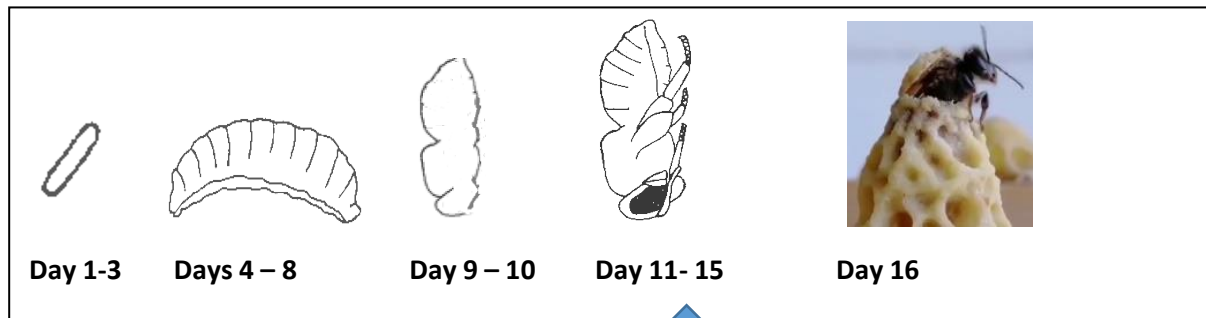


This shows an egg and a young larva. All honey bees begin life as eggs. If the egg is not fertilized the result is a male bee. If the egg is fertilized it will become either a worker bee or a queen bee.



If the egg is to become a queen, the bees build special cells to allow for the developing size of the new queen. Each young larva is fed a special diet called royal jelly.

When a hive prepares to swarm, a large number of these cells are built. Each cell is well cared for and because plenty of food is available, the bees generally produce outstanding large queens. Only one of which will survive after the hive has swarmed.



A time line to swarming:

Days 1-3 The egg

Days 4-8 The larval stage in which the developing larvae moults thru 4 stages as it grows.

Days 9 -10 The pre-pupa stage (The transformation)

Days 11-15 Pupa state (the development of legs, facial features, but no wings)



The time when a hive swarms



Queen cells can be opened and examined for development. The eyes and appearance of mouth parts can indicate the age of the developing young queen. The eyes grow darker from pale pink to dark black.

A swarm leaves the hive before the young queens emerge.

Making splits is one emergency way to take advantage of a hive about to swarm. But miss one queen cell and the hive will still swarm.

What happens when the young virgin queens emerge from cells?



This is a queen cell just after the new queen in it was stung to death. Only one of the many young virgins queens will survive.

One will find many cells cut down as this picture shows but many will have open ends and not yet cut down. These are signs that swarm prevention will not work – the hive has already swarmed.

Wet or cold weather sometimes causes bees to delay swarming. They often build younger cells and cut down older swarm cells.

Wet and cold weather only delay the swarm.



What do these two queen cells tell us?

We have a hive that is going to swarm. No doubt about it!

The first is not yet capped. We can expect a swarm within 9 days.

The second is capped. We can expect a swarm at almost anytime soon.

The capped cell in this photo indicates the young queen will emerge very soon. The tip of the cell shows what appears to be the cocoon from which the virgin queen begins to cut her way out of her cell. This is the lid that the queen pushes out of the way when crawling out of the cell.



The best stage to prevent a swarm is before bees begin to build queen cells. These things do not prevent swarms when the bees start building queen cells:

- **Putting on a super to expand the room in a hive is a bit late.**
- **Destroying queen cells often does not work. If one does cut all queen cells, the bees will build more.**
- **Clipping the wings of a queen will not prevent a hive from swarming.**
- **Putting a queen excluder or queen trap on a hive does not prevent swarming.**
- **New queens will swarm! If someone tells you they will not – they don't have much experience with bees.**



Other than splitting a hive with existing queen cells, it is hard to stop the swarming impulse. Swarms generally leave a hive sometime around 14 days after eggs are laid. Weather conditions have some bearing on this event. Bearding in front of a hive is an indication that conditions within the hive are crowded and hot.

Some drastic steps are still available to prevent the hive from swarming. One method I have used – not always successful but it has given me good results.

This method will require a queen excluder and additional hive bodies. In fact two of them.

Method: I found this technique in an English bee book published by L.E. Snelgrove. It is a bit involved and can be used when queen cells are to be destroyed to prevent swarming. I adapted it to my beekeeping way of doing things:

The greatest advantage of this method for me was:

- I saved time by not having to locate the queen in the hive.
- Shaking bees off the frames allowed me to find all queen cells – and like a swarm the bees quickly crawl back into the hive.

First step: Remove hive bodies from the bottom board. These can be placed on the top cover if it is turned over to protect bees from being crushed.

Next step: Set a new box (now called box A) with frames on the bottom board. If the box contains only frames of foundation, remove several frames from the boxes on the top cover to place in the new box. This will help the bees in this new box get established. Queen cells must be removed on these frames when transferred to box A. Remember, we want the old queen in Box A.

Place the queen excluder over box A and then add the second new box. **The bees on the all frames to be moved into Box B need to be shook on the ground in front of the entrance to the bottom board.** They will march into the hive. The queen should be among them! Young worker bees will pass thru the queen excluder to care for brood placed above it.

Cut down queen cells on all frames moved to boxes above the queen excluder. Add the brood boxes to the upper levels of the reconstructed hive. Add an upper entrance so bees can fly from box above the queen excluder including drones. Otherwise the drones in the hive above the queen excluder will not be able to get out and often plug up the queen excluder. This improves air movement within the hive.

What is accomplished by all of this?

- The old queen is located in the box in location A. There is no brood in box A but comb is available so the queen can start a new brood cycle. Remember swarm bees build comb and build up fast.
- All nurse bees move up thru the queen excluder to care for existing brood.
- Extra room has been added to take care of the large population of bees.
- The bees will fill the supers above with honey as young bees emerge from brood cells.
- Crowding has been reduced.

The following illustration shows some idea of the procedure.

