



Swarming Time Again

By Dana Stahlman 2015

There are some topics that just don't
get old!



I do not think that
anyone regardless
how long one has
kept bees does not
**get excited when a
swarm leaves a hive.**

The question is why do hives swarm?

- **Swarming has a number of causes.**
- **Nearly all the causes of swarming are within the control of the beekeeper!**
- **Swarming will vary a great deal in the same locality from year to year.**

It is natural for honey bees to reproduce by swarming – it is an inherent instinct in the bees themselves.

Scientists have explained the actions of animals with the following explanation:

Actions are a result of stimuli-response rather than conscientious thought. This can be seen and understood by examining a number of examples.

If we can understand the stimuli that cause honey bees to swarm, we can to a certain extent control the stimuli not the bees.



Bee books will give various causes for swarming!

But experienced beekeepers know that once the bees develop swarm queen cells, it is pretty hard to put a stop to the bees impulse to swarm.

Swarming Time



- For many beekeepers the first sign of swarming is to find a number of new queen cell cups being built by the bees in the hive and if found early, they will have either eggs or small larvae in them. But the bees start preparing to swarm before they start queen cells.
- Two questions may be of interest to you:
 - 1) Why are they building swarm cells?
 - 2) What can you do to control the swarming impulse and try to stop the bees from swarming?
- First, lets take a look at the causes:

When a hive builds queen swarm cells it is a result of a stimulus and a number of things begin to happen well before the bees start building queen cells.

- **Causes/stimuli**
- **A congested brood nest**
- **Queens need cells in which to deposit eggs. A strong developing hive with a good queen will require about 1500 or more open cells for that queen to lay eggs in each day.**



Congested Brood nest

- We know that young bees carry out various task in a hive of bees.
- **What happens if the young bees just emerging having the task to clean and prepare cells for the queen to lay eggs and find fewer and fewer cells to clean?**
- **And older bees who have the job of building worker cells find no place to build those cells – what happens?**
- **The stimuli of having little work produces a reaction by the bees in the hive. The first sign of a reaction such as this : The production of drone cells rather than worker cells. A beekeeper will see that drone cells in the hive are being cleaned and prepared for eggs the queen will lay in them.**

Signs of a congested brood nest

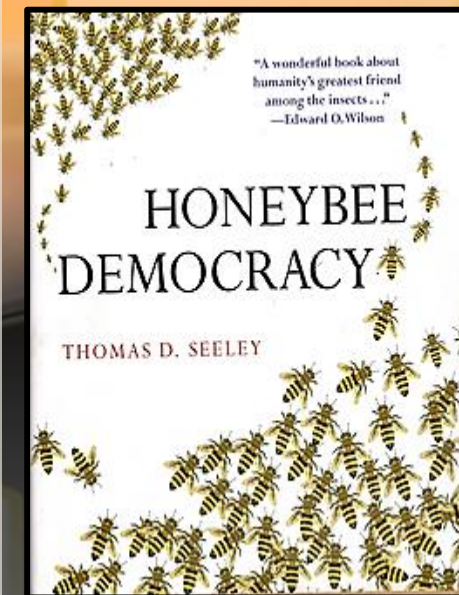


Other factors associated with a congested brood nest

- **With the increasing population of worker bees:**
 - **Hive inside temperatures increase – research shows this is a factor.**
 - **Queen pheromone reduction per bee – research shows this is a factor.**
 - **As populations within the hive are increasing rapidly, one other factor is going to affect brood nest congestion:**
- **The Spring honey flow**

Nearly all of the causes of swarming are within the control of the beekeeper!

- Swarms issue from bee hives in the spring, but if you have kept bees, you most likely have seen or had hives swarm later in the season. Sometimes it is difficult to explain why a hive swarms – It is the inherent instinct sometimes related to a specific strain of bee. The old rhyme:
 - A swarm of bees in May is worth a load of Hay
 - A swarm of bees in June is worth a silver spoon
 - A swarm of bees in July isn't worth a fly
- We have learned a good amount of information from research and if you are really interested in how the process begins and how bees decide how they make decisions, I recommend the book Honeybee Democracy by Thomas Seeley.



Some Interesting facts from Honey Bee Democracy by Thomas D. Seeley

- Seeley says, “I can predict with fair reliability when I will find my first swarm by noting when my hive of bees mounted on platform scales finally ends its six-month long free fall in weight and begin to bulk up again on fresh nectar and pollen.”
- In early spring a beekeeper will often find a hive full of bees actively seeking nectar and pollen sources. As winter stores (honey and pollen) are used to rear brood, a strong hive has a bee population eager and ready to replace all stores used. With spring flowering trees in bloom [Willow and Maple] one can see abundant loads of pollen coming into the hive – in fact a surplus of what they need to raise new brood. Pollen and nectar are stored in cells. Hive weight begins to increase.

Storage of nectar and pollen



This is a standard deep frame. The comb area on a deep frame covers a distance of $16 \frac{7}{8}$ inches across and about 8 inches deep. Total frame size is $19 \times 9 \frac{1}{4}$. It has a total of approx. 136 square inches for comb construction per side of the frame.

The boxed area above the brood is the typical area where nectar and pollen is stored. This box represents about 36 square inches in which two pounds of nectar and pollen could be stored. Bees typically store the honey and pollen in a crescent shape.

Major causes for swarming

- **The lack of worker cells for the queen to place eggs**
- **Lack of honey storage room**
- **Signs of a pending swarm**
 - Drone cells being built in large numbers [worker cells in various stages of development and drone cells present at the same time]
 - Bees hanging on the outside of the hive entrance.
 - Queen cells present or being built.
 - Burr comb built anyplace comb can be put.

Control Ideas

- **# 1 You must start early to control swarming.....**
- **Management of the brood nest is essential to prevent swarming.**
 - Adding boxes of supers especially new foundation is not going to stop swarming.
 - Cutting queen swarm cells every week is not going to stop swarming.
 - Improper use of a queen excluder will in fact encourage swarming.

Beekeeping or just let nature take its own course!

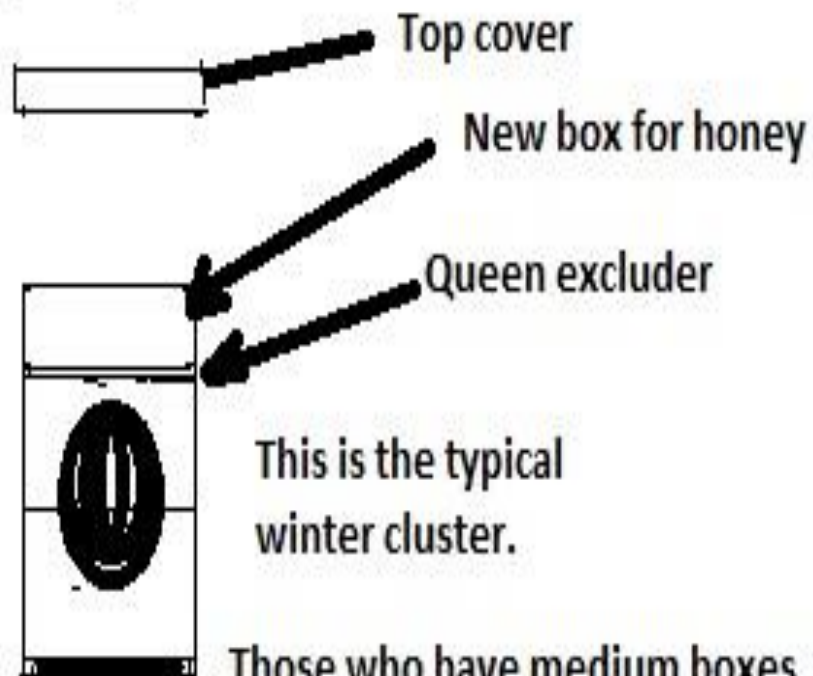
- Swarm Prevention begins the minute you see willow trees start to yellow up. For us in Ohio, it is not hard for a person to want to see if the bees survived the winter. Swarming season begins with nectar and pollen being available. Just give us a warm day!
- There are a number of practices a beekeeper can employ to limit or prevent swarming. **“Diligent monitoring of the hive during early spring through the nectar flow is the most important part of each of the following described practices.”**

Methods used to limit and control swarming

- One needs to understand that providing adequate brood space and preventing overcrowding are simple effective swarm preventive measures.
- All swarm control management methods take advantage of this principle. Swarm control can easily be combined with increasing colony numbers if the beekeeper wants to take advantage of this opportunity.
- It has been an axiom among beekeepers from way, way back that strong colonies are the one's that make honey. If one is keeping bees for honey production, swarm prevention is very important.

This is not the way to stop a swarm!

Opening the brood chamber



Those who have medium boxes for all hive bodies will find it easier to move frames

It is important to open up the brood chamber. As shown here, the typical brood nest begins to expand and move upward in the brood nest in late winter.

Add a queen excluder and you encourage bees to store honey below it.

Add a super/box for honey storage with new foundation and the bees will be slow to move up into it.

Beekeeping in the past

- Hives configured with two brood chambers usually have the bees in early spring in the upper box. *It was common at one time for beekeepers to reverse the boxes.* At the same time, the bottom board was reversed from the winter side to the summer side.
- How many of you still do this?
- *Dr. C.C. Miller developed a system using a slatted rack placed on a deep bottom board to allow for bees to cluster below the brood chamber.* This helped but did not stop swarms.
- Do any of you use slatted racks?

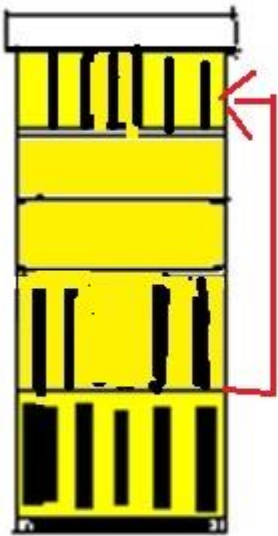
Standard Spring management to reduce swarming

- **A beekeeping practice in spring is to equalize all colonies.**
- That involved taking brood frames from strong colonies and giving them to weaker colonies. Some call this checker-boarding by replacing the removed frames with “empty comb” or new frames with foundation. Moving brood combs to weaker colonies helps strengthen the weak colonies before the honey flow and provides empty comb in the strong colonies so the hive is not congested.
- If one does not want to make increases which is an added benefit to many swarm control methods, all one needs to do is move frames from the brood chamber to a box of the same size above the honey supers. The frames taken for the upper box are replaced with either frames of drawn comb or frames with new foundation. Once the bees emerge from the cells in the upper box, the bees will begin to fill those cells with honey.

Stop the swarm -- Hopefully

- This must be done before queen cells are started

Opening the brood chamber



The yellow area clearly shows the open area that can be expanded into by the bees.

This process can be repeated again when the new frames have been drawn out in the bottom deep.

A beekeeper must know this will produce honey but it must be constantly monitored before the bottom brood boxes become congested.

Called checker-boarding

Frames with honey and capped brood are moved from the bottom brood chambers into the top box. All brood will emerge and add to the hive population. The box with the brood frames will quickly be filled with honey if a good honey flow is present. Brood will need to be brought to the top of the box and supers added as the population continues to grow.

This is a combination of other methods

- The checkerboard system is an adaption of The Demaree Method of Swarm Control and also the Snelgrove Board swarm control method.
- Both the Demaree and Snelgrove systems allow for making increases using various management techniques.
 - Both raise brood above the brood nest just like the checkerboard system.
 - The Demaree System was first developed in the 1880's and is used in various styles. In it Demaree removed all the frames from the lower chamber replacing them with empty comb, placed a queen excluder on the lower chamber, and shook all the bees including the queen from frames on a sheet placed in front of the lower chamber. Satisfied that the queen was in the lower chamber, the upper supers with brood were added above the queen excluder and as the brood emerged from cells, the bees filled the cells with honey. Some found that placing a single frame of brood in the lower chamber helped hold the bees from swarming/absconding from the hive.
 - The Snelgrove system uses a board with lower and upper entrances that govern how bees leave or establish flight from the entrances. Brood is raised up above the board. With one of the eight openings, the older bees moved up would find their way out and return to the original entrance. All new bees would use the entrance opened (new entrance into the upper level of the hive). His book –Swarming – Is Control and Prevention published in 1934 and still in print.
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Major Problem with this method

- If frames with eggs or larvae are moved into the top box, the bees will raise another queen. This is a form of the Demaree Method developed in 1882. It could be adapted to produce increases by introducing a few changes. One would be to provide an opening for the virgin queen to leave the hive to mate. A queen excluder would also have to be used to keep both queens separated into various sections of the hive. Once the new queen began laying, the top box could be removed and the checker-boarding done all over again.
- But the real solution if you do not want to make increases, is to check the box with the moved frames for queen cells and destroy them. No need for the upper entrance or the queen excluder if the cells are cut/destroyed.

Controls that a beekeeper can try

- Swarming begins soon after maple, willow, and dandelion bloom



This is the time for an early hive inspection.

All beekeepers need to check hives as soon as spring arrives. In fact, hives that over winter in Ohio start brood rearing in February or earlier. Honey stores are used as brood demands are put on it. Queens need to be evaluated – dead bees cleaned from the bottom board – some reverse brood chambers – and some identify hives that are likely to swarm.

Specific things you can do to limit swarming

- **Learn how to use queen excluders – they require special management techniques.**
- **Replace older queens**
- **When using new foundation, place the new frames between frames with drawn comb if possible.**
- **Provide good ventilation during hot weather**
- **Replace poor brood comb – large amounts of drone comb--Contributes to lack of worker egg laying space.**
- **Clipping a queen's wing**
- **Be sure you have a balance between young bees and older bees - Reduced Brood Pheromone -- Unsealed brood emits pheromones that are partly responsible for suppression of worker ovary development and swarming inhibition.**

Other management techniques

- 1) Remove frames of bees/brood to add to weaker colonies or use to create nucs.
- 2) Cut queen cells from colonies every seven to nine days beginning four weeks prior to the primary nectar flow and throughout.
- 3) Provide adequate empty combs in the brood nest and/or add supers to colonies to reduce colony congestion.
- 4) You could even move strong colonies to other locations during the day and place a weaker colony in its place. The weaker colony will pick up most of the older foraging bees – the ones that are usually found in a swarm.
- 5) Another technique is brood interruption. Confine the queen to a nuc for a short period of time and either allow the hive to raise a new queen or cut all queen cells and reintroduce the old queen. A queen could also be confined within the hive releasing queen pheromone that would discourage the bees from building new queen cells.

There are many methods that have been developed to control swarming.

- So many in fact that all I can do is list them and make a few comments about each.
 - **The Aspinwall Hive**
 - **Dr. Jones Method – stands out as somewhat interesting – Killing drones**
 - **Miller, Doolittle, Alley and almost anyone else with an idea.**
 - **Newest book to be published on Swarming ---Swarm Essentials: Ecology, Management, Sustainability by Stephen Repasky.**



Where is it going?

Can I capture it?



**And If you
capture them
How good it is!**