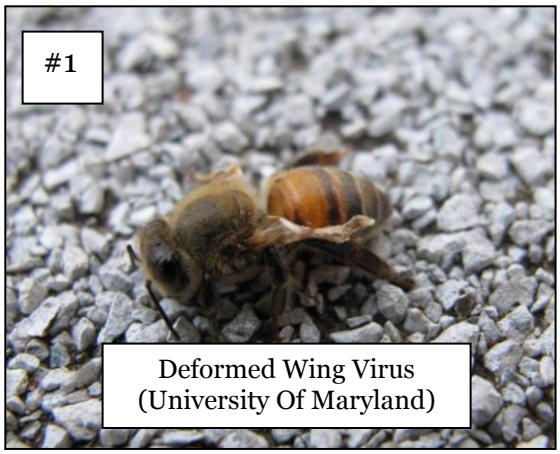
A NEW LOOK AT SPLITS

Beekeeping requires more attention to detail in today's environment. Varroa mites, the viruses they bring, new insecticides, small hive beetles, and early Queen supersedure make beekeeping more difficult than it was in the good old days. In my area of SE Arkansas, hive inspections every 2 or 3 weeks and testing for Varroa every 6 to 8 weeks are necessary to prevent hive losses. In these conditions we also have to be more careful when making splits.

First, we have to have a really low varroa mite count. The standard threshold for Varroa treatment is 3%. That is six Varroa mites in a 300 bee sample. The problem a is that viruses will continue to be active even after the hive has been successfully treated. I have better success when the Varroa count has been 1% (two mites per 300 bees) or less for 4 to 6 weeks and the hive is healthy and growing. I then look for any sign of viruses, especially Deformed Wing Virus. I look at the open brood for discoloration and the sealed brood for pinholes or sunken caps.

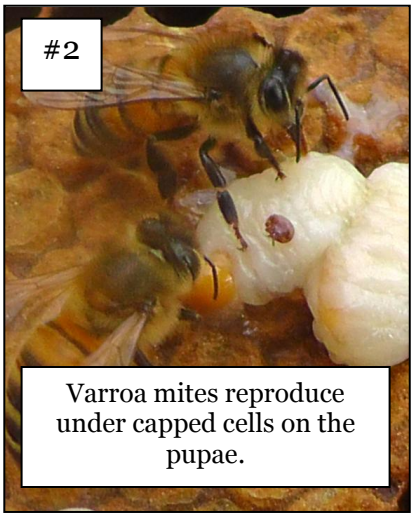


Deformed Wing Virus
(University Of Maryland)

VARROA CONTROL IS CRITICAL!

Note on Testing

People often tell me they don't have Varroa mites. They even look with a magnifying glass and don't see any. That's because VM are hard to see on a frame of moving bees. Others tell me they use a sticky board and count the mite drop. I don't trust sticky board counts because there's no way to know how many dead mites didn't fall on the sticky board because the bees carried them out before they fell.



Varroa mites reproduce under capped cells on the pupae.

Using a sugar roll *should* show most of the mites in the sample, but often does not show all of them. The alcohol wash is the most accurate test for Varroa mites and even that test varies a little. Varroa mites enter the cells to reproduce just as the cell is being sealed. If we take our sample of bees from a frame with older larvae where cells are being sealed, the alcohol wash will have little variation. ***Always be careful not to get the queen!***

Note on Treatment

I don't use 'hard' chemicals such as fluvalinate, amitraz or coumaphos, but if you do, those chemicals need to be removed 4 to 6 weeks before making the split. Splits can be made after 1 week when using 'soft' chemicals such as thymol or oxalic acid.

I made an oxalic acid vaporizer with a heating element that does not overheat (372^{o} F) and decompose the oxalic acid powder. In spite of standard recommendations, I use small doses (1/4 teaspoon) every 4 days for 4 treatments, then once every 4 to 6 weeks. *Just my opinion*.

Splits Are A Form Of Queen Rearing

To raise queens, bees require these resources:

Young Bees

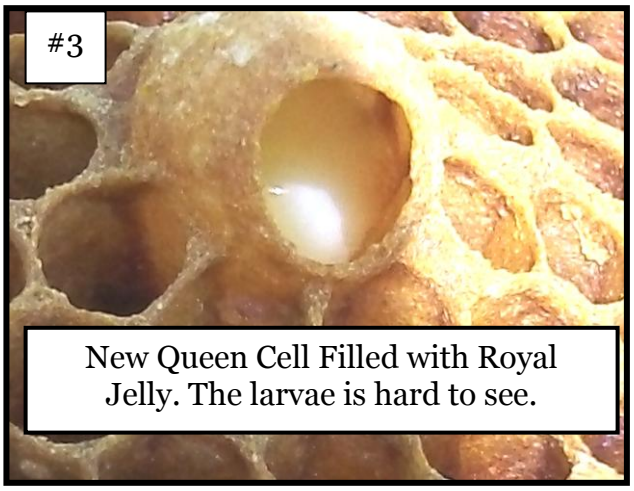
Young bees produce royal jelly to feed queen larvae and secrete wax to build comb and queen cells. This means that having a lot of young bees is critical for raising good, well fed queens.

To be sure you have plenty of young bees, add 2 or 3 frames of sealed brood to the hive 14 days before making the split.

This allows enough time for that sealed brood to emerge and mature enough to produce royal jelly and secrete wax. (If you don't have a second hive to get extra frames of sealed brood, it's OK to beg or borrow from friends!)

Pollen

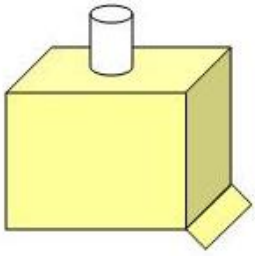
Young nurse bees require pollen (protein) to produce royal jelly. For the best results, leave only one frame of eggs and young larvae in the middle and ***place a frame of pollen on each side of that frame***. Removing all but one frame of larvae reduces competition for feeding. In addition to the frames of pollen, a pollen patty directly on top of the frame of larvae makes sure the nurse bees have plenty of pollen available.



Nectar

We leave several frames of open honey (nectar) next to the frames of pollen because young bees have to feed on honey to produce wax. An incoming nectar flow ***stimulates*** wax production. However, with my procedure all the forager bees returned to the original location so there are few bees bringing in nectar. This means a syrup feeder is critical.

I use wood top covers and cut a hole the size of a fruit jar lit. This places the syrup directly on top of the frames for easy access.



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Eggs And Young Larva

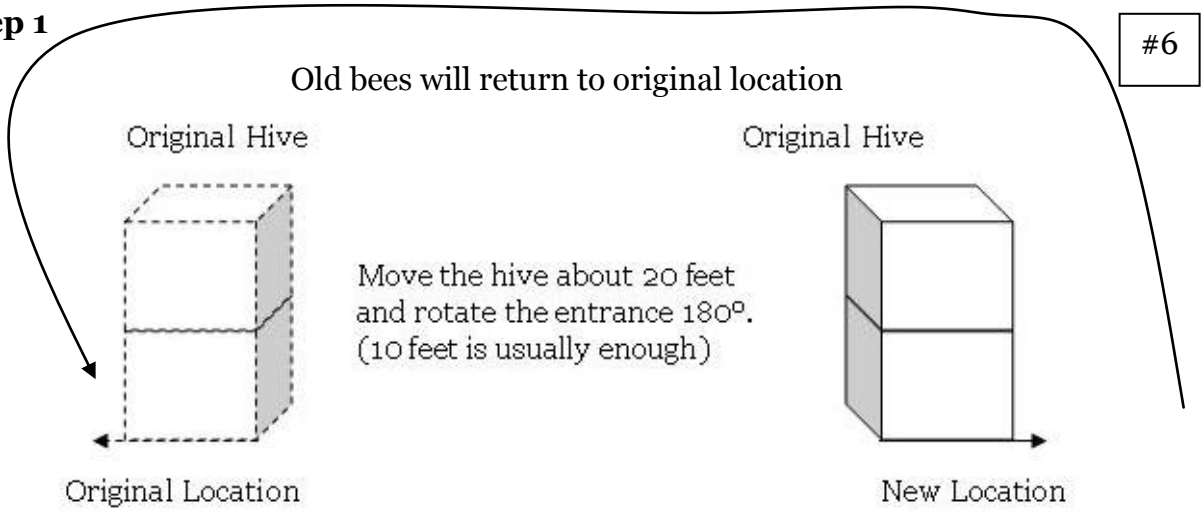
The young bees must have young, fertilized larvae to produce queens.

The Hive Must Be Queenless.
The colony will NOT raise a new queen if a healthy, laying queen is in the hive.

PROCEDURE

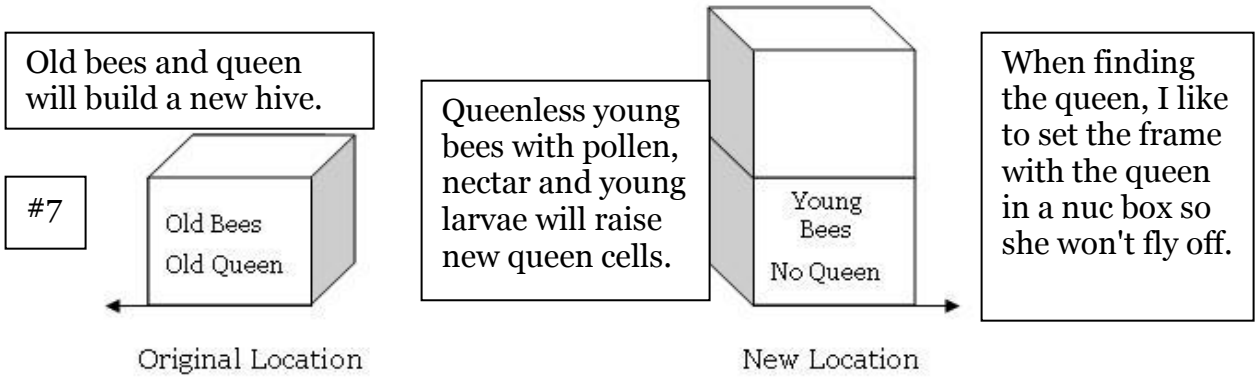
Select a strong, growing colony to make the split. Be sure the hive has several frames of pollen and open honey. We will move the hive 20 feet to separate the old bees from the young bees.

Step 1



Step 2
- ❖ Set up a new hive in the Original Location with empty comb or foundation.
- ❖ Add one frame of mixed sealed and open brood and one frame of honey.

Step 3
- ❖ Wait 24 to 36 hours for the **older bees** to return to the original location. This will make it easier to find the queen.
- ❖ Find the queen in the hive at the **new location** and move her to the **original location**. Moving queen leaves the hive queenless at the new location with young bees.



It will be 24 to 28 days after the split before you will see new eggs.

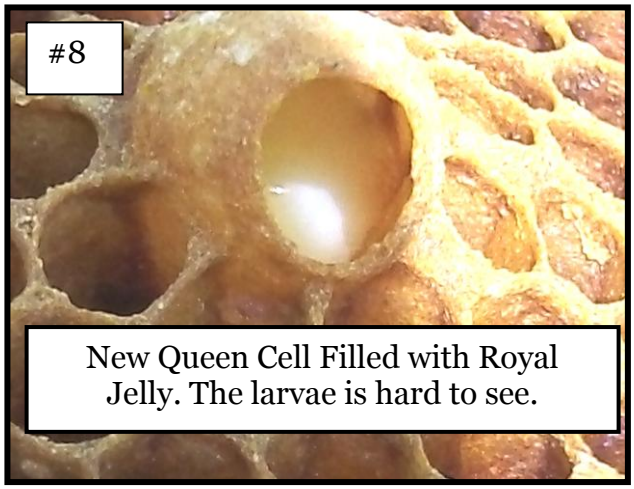
The old queen and old bees at the original location will proceed to raise brood and gain strength. Adding a few frames of sealed brood will help them build up faster. The young bees at the new location will select several young larvae and build queen cells.

The queen cells built at the new location will emerge as virgin queens 12 to 14 days after making the split. The virgin queens will fight to the death until only one remains. About 10 days after emerging, the remaining virgin will leave the hive to mate in the air with 15 to 20 drones. She will return to the hive and after several days begin laying. You have now split one hive into two hives. You can raise queens! Try the single split first for experience and take notes on your observations. You may want to raise more queens!

RAISING MULTIPLE QUEENS

If you want to produce more than one queen and start a few nucs, you can do this by using combs with wax foundation. Actually, only the frame with the queen cells has to have wax foundation so you can cut out individual cells and put them in separate nucs. Plastic foundation is too hard to cut.

Caution: Queen cells are very delicate and easily damaged. Handle them with care!



New Queen Cell Filled with Royal Jelly. The larvae is hard to see.

Saving a Swarm
Actually, I start feeding when I add the frames of sealed brood - 2 weeks before the split. This means I have to check the hive **every 4 days** for swarm cells! I add empty combs or foundation to discourage swarming, but sometimes they start swarm cells anyway. It takes 5 1/2 days for a queen larva to be sealed. Checking every 4 days allows for overlooking some very young cells.

Finding swarm cells is OK because the swarm impulse and swarm conditions (crowded and growing) produce some of the best queen cells! When inspecting a hive, what should you do if you find swarm cells? First, look to see if any of them are sealed. Swarms tend to leave as soon as the first cells are sealed. If few cells or none are sealed, look for the queen. When checking for swarm cells, have an empty box with a closed entrance and top cover ready. If you find swarm cells **and** the queen, they certainly have not swarmed yet, but may at any time. When you find the queen, move the frame with the queen into the empty box and add a frame of honey. Finish filling the box with empty combs or foundation.

Immediately Start The Split Procedure by moving the box with queen cells to a new location and reversing the direction of the entrance. The old bees will return to the hive at the original location.

Do not try cutting out swarm cells to prevent swarming. By the time honey bees start swarm cells, they're really determined and hard-headed about it. 90% of the time you will lose the swarm anyway. If you can find the queen, split the hive.

Even if you can't find the queen, if you find eggs and only a few cells are sealed, the colony has likely **not** swarmed. In an effort to trim the queen's weight so she can fly, the bees curtail the

queen's diet and egg laying several days before leaving so she will be able to fly with the swarm. By the time the colony swarms, there will be very few eggs or none at all.

If you find open swarm cells and eggs, but cannot find the queen, fasten a strip of plastic queen excluder across the entrance to keep the queen from leaving. Move the hive 20 feet or so to a new location. Assemble a new hive at the original location with a little brood and a frame of honey. With the queen excluder across the entrance, you can wait until the next day to allow time for the older bees to return to the original location. This will make it easier to find the queen. Before looking for the queen, have a queen clip, empty box or nuc box ready to put the queen in. She will be nervous and may fly off.

If you still cannot find her, assume the hive has already swarmed and move the box back to the original location.

If you find the queen, place her in the hive at the original location with the **old** bees. They no longer have enough resources (food and population) to swarm and will *almost* always start vigorously building a new colony. (Maybe they think they've already swarmed!?!)

Because we don't know how old the cells are, move them to mating nucs 7 days after you separated the boxes. Again, be very careful with the cells. (You'll probably damage a few no matter how careful you are, but you should still have plenty of cells.)

Summary

- Reduce the Varroa count as much as possible
- Add sealed brood to provide extra young bees
- Provide pollen
- Use a syrup feeder
- Provide one frame of eggs and young larvae

This procedure requires a little more effort and attention to detail, but you will be more successful and raise healthier queens.

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