

Woodlands Apiary

April 20, 2013



This is the time of the bee year that the established Queen leaves the hived colony with 40 to 60% of the stock as a means of natural reproduction. In a process called *swarming*, the departing old queen and attendant workers will temporarily settle within a 100 meters or so, remaining for a day or two, before either departing and making a *beeline* for a newly scouted colony site or, sometimes, by destroying the old queen and returning to the originating colony. Primary swarms tend to emerge towards the end of April through to mid May, casting from the hive at around or shortly before noon – secondary swarms may be cast through May, June and July.

As spectacular a natural phenomenon that swarming is, it is to be suppressed in the Apiary because, amongst other things, it leaves the originating and remaining colony much depleted; the swarm preparation process disrupts the brood raising cycle; and the beelining swarm will add to the number feral colonies open to disease and mite infestation over which we beekeepers have no control.

Preparations for primary swarming commences in April with the bees preparing half a dozen or so cups of special queen cells that project from either the top or bottom of the frame – the cells are drawn downwards like a thimble or peanut and each receives an egg which is floated in a special feed known as Royal Jelly, comprising a protein rich secretion from young worker bees. The egg to adult insect metamorphosis is



Egg hatching	Day 3
Larva	Day 3 to Day 8/9
Cell Capping	Day 7/8
Pupa-Insect Emergence	Day 15/17

Swarming can commence as soon as the first queen cell has been capped (Day 7/8) or it might delay to just before or at emergence of the first new virgin queen (Day 15/17). If you missed the swarming, good indicators of a swarm departure are where the queen cells have been attacked and opened from the side by the first virgin queen killing off her pupating sisters and, of course, the number of bees in the hive will be depleted by as much as 60% of the pre-swarm stock.



Swarm Control: There are several methods of swarm delay, control and management:

1) **Swarm Delay:** This method delays swarming by systematically destroying the queen cells under development but, to disadvantage, it leaves the old Queen in situ – this is not suited to colonies where the resident queen is two seasons (years) or more of age.

Systematically work through the hive brood chambers destroying all queen cups and unsealed queen cells. If there are sealed queen cells present then, before any taking further action, search for the old Queen. If you find the old Queen then proceed to destroy all of the sealed queen cells. Repeat this process at least every 7 days destroying all of uncapped and capped queen cells so long as the old Queen remains in the hive until the bees stop producing queen cells – this might last for two to three weeks.

If the old Queen cannot be found then the colony may have already swarmed – in this case, identify the largest sealed queen cell and destroy all other sealed and unsealed queens cells to prevent secondary swarm casts which

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will heavily deplete bee numbers. The preserved virgin queen should emerge (Day 15/17) and mate a few days later (about Day 20) following which brood production should commence.

- 2) **Colony Expansion:** If two or more capped (or near capped) queen cells are available from 1) above, a day or so beforehand, isolate about 3 to 4 frames of bees in a nucleus box and shut off all of the openings with wire mesh, leaving some honey bearing frames in with these queenless bees. After a couple of days of isolation, introduce the frame containing the sealed/unsealed queen cell from the previous colony of 1) and after a few hours let the bees fly. You can protect the introduced queen cell from attack by the host bees for a few days with a cage that shrouds and protects the cell walls but allows the virgin queen to emerge.



With luck, the nucleus bees will adopt the virgin queen and brood production will commence.

- 3) **Colony Manipulation:** There are several variations of manipulation of the hive to either deceive or manage the swarming instinct:

a) **Chequerboarding** is a simple technique where the brood space is increased immediately above the brood chamber by arranging the empty (super) frames in an empty-part full pattern to deceive the bees into believing that there is surplus space, thus lessening the urge to swarm. The technique has to be put in place early in the season ahead of swarming, say in March and early April if it is to be at all effective.

b) **Artificial Swarming** is where the bee colony is divided to prevent swarming – again there are a number similar techniques and manipulations of the hive to achieve this. The basic principle is to divide the colony and reduce the number of bees in the potential swarming half to frustrate and reduce the swarming urge.

First, early on a fine flying day, move the original or **parent** hive to one side by at least 1 meter.

On the original hive site, assemble a new floor and brood devoid of bees and insert into it one or two frames of unsealed and sealed brood with bees taken from the **parent** colony – it is important that the uncapped egg cells are in the earliest stage of development (about 1mm in length – see right) and there should be no queen cells on the frames transferred into the new brood chamber. Add a super or two onto the new brood chamber, crown board and roof. Bees on the wing from the moved **parent** colony will return to the **new** colony and bolster bee numbers in residence.



Leave both parent and new hives for six to seven days. Then examine the **new** hive brood chamber – if there are new queen cells then select the most advanced and destroy the others. If there are fresh eggs but no queen cells this means that the old Queen is in residence so, in this case, as the colony builds up strength over the following week or two check for the new queen cells and destroy these as in 1).

Otherwise, if new queen cells are present in the **parent** colony then you can select the most advanced and destroy the others. Since the parent colony is depleted in bee numbers it is unlikely that the parent colony will cast secondary swarms, so it is quite safe to leave two or three developing queen cells because the emerging queen will take over the colony by destroying her sisters before they emerge.

The preferable situation is for the old Queen to remain in the **parent** colony because this is where the hive manipulation has reduced the number of flying bees which tend to dominate the swarm mix. As the season develops you can either recombine new and parent colonies by, first, culling either but not both old or new Queen (depending on performance), or the colonies can remain and develop as separate entities.

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Supersedure Cells: Later in the season, June/July some colonies will construct a few supersedure queen cells to replace an ageing or ailing queen – this course of events is most likely to occur with swarms that have been introduced to the apiary because these swarms retain the old Queen of a least two or three seasons age.

Supersedure cells are typically found in the mid-height of the frame (see right) and the colony upon the virgin queen's emergence (Day 15/17) will either cast a small swarm with the old Queen or 'ball' (kill) the old Queen upon the adoption of the virgin or freshly mated queen. You can either let nature take its course or cull the old Queen once that the supersedure queen cell is capped.

All of this gives rise to the old poem

*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.*

and which for the last line really means

"A swarm of bees in July, let them fly".



John Large