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Vertical-split swarm control

Ken and Dan Basterfield describe a swift, elegant, and reliable swarm control method



There are numerous approaches to swarm control from the complicated and time-consuming systems at one end of the spectrum to 'let them go' at the other. Both have their costs and benefits. We have, in our time, tried most swarm control systems. Based on 50 years of experience, we have no faith in cutting out queen cells and the like; it may keep the colony intact but so demoralised that they fail to forage, and become unproductive.

The early influence on my swarm control system development was Snelgrove, but the theory underlying all those convoluted interventions (such as Gerstung's excess brood food) had, even by then, been discredited. All that remained of value for me was his swarm board, albeit greatly simplified from six doors down to one.

Splitting to prevent a swarm

A colony that is preparing to swarm can normally be deterred from doing so by temporarily separating much of the brood and most of the flying bees. Sounds obvious! The effect is not just transient, it appears to change the colony's 'mind' about swarming, just as the onset of a strong nectar flow can. Hence the common practices of Pagden and Demaree, along with the nucleus method, have become established. However, these techniques require considerable extra equipment. To be able to do this with only a split board and a second brood box makes for efficient beekeeping.

Equipment

To split a colony vertically, all that is required is an extra brood chamber (and frames) and a split board. The split board is shown in Diagram 1 and is very easily made from an ordinary crownboard with the addition of a closeable entrance. In using the board technique, the colony is split vertically into a queenright component at the bottom with a queenless portion above. The queenless component will in due course raise its own new queen and both components can then be reunited, or separated if expansion is desired.

images: Dan Basterfield

If the colony is strong and already on two brood chambers, as described in last month's article, this requires only a split board. All of our crownboards have been modified in this fashion so that we can split any colony without needing to carry additional equipment.

Timing

It takes about four weeks from the date of the split to have a laying queen. We use the board only on colonies that show definite signs of swarm preparation during the normal course of hive inspections. Since we clip queens, this gives us plenty of time before a swarm departs. The timing is therefore determined by the bees, and we have to judge whether there is time to reunite before the main flow or to use it for expansion or replacement instead. Here in Devon, a colony swarming as late as the third week of May can be reunited well before the main flow in early July.

The technique is also applicable to large colonies that you think might try to swarm even though they may not be currently attempting to do so. In this case, you may deter swarming and reunite with a young queen at your leisure.

The technique in practice

The diagrams below are drawn in a consistent orientation – appreciating this will help understand the manipulations. I have chosen an initial north-south alignment simply to help clarify the explanation – you can simply adapt the manipulations to your initial hive orientation. What is important is where the bees are used to finding the entrance to the hive. This process is also appropriate to a single brood chamber colony that is preparing to swarm in which case you will need an additional brood chamber and combs or foundation to fill the boxes. We start with a double brood colony.

Diagram 2 shows the hive at the start of manipulations. The floorboard entrance is nominally south.

The hive is disassembled to expose both brood chambers. The lower brood chamber and floorboard are rotated through 180 degrees, so the entrance now points in the opposite direction (north).

Brood frames are counted and distributed (with their adhering bees) roughly equally between the lower and upper brood boxes. The queen is left in the lower brood box, and any queen cells there are destroyed. Only one good, open queen cell should remain in the upper box: a nice, fat well-provisioned queen larva, with open brood positioned close by. (If you started with a colony that had not yet raised swarm cells then ensure that there are young larvae in the top box from which the bees can raise emergency queen cells.) The overall proportion of open to sealed brood in both boxes should be roughly equal.

The frames of stores are shared out so that the lower box has the larger proportion, because they will lose the foraging bees, supers and subsequent income to the upper box.

The split board should have wire gauze pinned on both sides of the feed hole to minimise communication through the hole. The split board is placed over the lower brood box, with the entrance on the upper side, facing south (Diagram 3).

The upper brood box is now placed on top of the division board, with the queen excluder on top of that (Diagram 4).

Now stand back and think what we have: two separate colonies on the same stand.

The entrance of the lower, queenright colony now faces north and loses flying bees used to a south entrance. It is thus heavily depopulated and, without flying bees, will abandon further swarm preparations and the queen will be brought back into lay. As new foragers emerge in subsequent days, they will of course orientate to this new north entrance.

The upper colony has no queen but does have a good queen cell. It collects the flying bees since they return to the hive but can no longer find the old entrance. Bees will search much more readily upwards than they ever will sideways and, in going upwards, find the new entrance above the split board and thus enter the upper colony. Any forage is therefore going into the upper colony and it is on it that we place any supers (Diagram 5).

The whole process is a one-off operation taking no more than 15 minutes.

Continued >

Vertical-split swarm control
Use this technique when you see signs of swarming or want to split a large colony that is likely to swarm



1 The split board



2 The hive ready to be split



3 The floor is turned by 180°. The split board is placed over the separated brood box with open entrance facing south.



4 Queenless box is placed over the queenright box with the splitboard in between and queen excluder above the top brood box



5 Hive reassembled with supers on top



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After care

It might be thought that the queenless upper colony might still attempt to swarm when its virgin emerges. Indeed, emergency queen cells will more than likely be raised in addition to the one swarm cell that was left. However, our experience is that they don't swarm even when left with the emergency queen cells, but you can revisit after five days and destroy any additional emergency queen cells if you wish.

The inspection cycle should continue as normal; a possible concern with the lower colony is whether it has sufficient stores. If necessary, we put a feeder in place, lifting up the division board and top boxes to accommodate it. The bees walking up from the old south entrance will just walk on up a bit higher!

During the first couple of inspections, the upper colony should be disturbed as little as possible when looking into the lower colony. We always inspect the lower colony first. Gently removing the roof and supers, stacking them to the side, lift off the upper brood box as a unit with its queen excluder and the split board still attached. These are moved aside onto the stack of supers and not opened yet. The lower colony is then inspected.

The upper colony brood box/split board/queen excluder unit is then replaced in position above the lower colony prior to inspection. We now gently look in the upper colony for the emergence of the virgin and, on subsequent visits, to see if she is laying.

Reuniting

Once the new queen is laying well, she is clipped and marked and then both halves of the split are ready for reuniting.

We leave the split board in place but remove from it one of the pieces of gauze over the feed hole so that the two colonies can get to know each other again without fighting. At the next inspection, the queen is removed from the lower brood box and the remaining piece of gauze is removed from the split board to unite both colonies. Once the workers have had a few days to become familiar with both entrances, the split board may be removed completely, and the colony quickly reverts to using the lower entrance.



The splitboard is made from a crownboard with gauze on both sides of the feed hole and a swivel-opening door

If desired, the whole hive can now be rotated in stages to return the lower entrance to its original orientation (ie southerly). On a good foraging day, rotate the hive through 90 degrees and fully remove any entrance block or restriction. A couple of days later, rotate through another 90 degrees to return the hive to its original entrance orientation. Do not try this quick rotation during cold or wet weather.

We then revert to normal double-brood management. However, the young queen is likely to lay in greater quantity and for longer through the main flow and beyond, so we place the queen excluder to allow her the use of both brood boxes, managing the teardrop brood nest shape as described last month. Once it becomes apparent that her brood nest is contracting, the remaining brood frames are consolidated into the lower brood box, with queen excluder above, so that winter stores can be accumulated in the upper brood box. The queen excluder will be removed completely for winter.

Variations and opportunities

The system is flexible and you can, for example:

- simply split the two boxes off into two colonies
- extract the old queen in a nuc prior to reuniting
- leave more than one queen cell in the top brood chamber and, when these cells are mature, the box can be divided into two or three nucs
- leave late-swarming colonies after the split to winter under one roof sharing their combined warmth.
- raise queens using the split board – the board can be applied to a strong colony that is currently without queen cells but which is required to function as a queenright queen-cell raising colony.

With minimal extra equipment, a vertical split provides a swift, elegant, and reliable swarm control method. It avoids the convolutions of the Snelgrove systems, the inadvertent queen raising of a Demaree and the equipment expense of a Pagden artificial swarm.

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Next time

We continue to question why we have incompatible frames for brood and for stores



Ken and Dan Basterfield run Blackbury Honey Farm in South Devon. Ken has been keeping bees since 1972 and was a founder member of the Devon Apicultural Research Group (DARG). He holds the National Diploma in Beekeeping (NDB). Daniel Basterfield grew up with beekeeping around him and in 2005 joined the family business, building a new beekeeping visitor centre and education facility. He holds the NDB and is co-author of *The Healthy Hive Guide* (IBRA and Northern Bee Books, 2019). www.blackburyfarm.co.uk

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