

Swarm Control using a modified/simplified Snelgrove board

Article by Ken Basterfield Reproduced from *BeeCraft* April 2011, adapted by Mike Hill

Swarming is a bit like puberty, it is rather painful but we all have to go through it! The objective then should be to pass this stage with as little disruption as possible and without, as far as possible, diminishing the colony's ability to produce a good honey crop.

There are numerous approaches to swarm control, from the complicated and time-consuming systems at one extreme to the 'couldn't care less, let it go' at the other. Both have their costs and benefits. I have, in my time, tried most swarm control systems.

Unless expansion is required, the colony should be kept together. Based on 40 years' experience I have no faith in cutting out queen cells and the like; it may keep the colony intact but it becomes so demoralised that the bees fail to forage and become unproductive.

If you seek discussion and analysis of competing swarm prevention and control philosophies then look elsewhere, what follows is how I do it and why it suits me.

Background Information

I have run about 150 colonies for most of the past 40 years. A few Nationals remain but I soon learned that a National brood box was too small for most colonies. I prefer Modified Commercials and double brood chambers are the norm. I don't have shallows, the supers being brood chamber depth, giving great flexibility in manipulations. They are heavy but I can live with that when a 'Super' yields 75 lb of honey. In the past few years, my son Daniel has returned to join me to set up new integrated honey farm facilities in East Devon. A few colonies are kept at home but most are kept in 10 or so out-apiaries. It is '10 or so' because we migrate over about 25 farm sites as crops come round in rotation. Queens are clipped and marked at first inspection, with a planned 10-day inspection cycle. Stocks are migrated to oilseed rape, field beans and sometimes clover. We have

forsaken the ling heather. It was not particularly reliable and moor management on Dartmoor is in decline. We have access to a large area of lowland heath which produces good crops of bell heather. All honey is now sold locally. We average about 200 lb a colony, with successive extractions throughout the summer. I did, some years ago, import 50 New Zealand *Apis ligustica* queens to try and we learned our lesson. We have long had an active stock selection programme, breeding from our best performers, with queens mated in Apidea mininucs.

We no longer bother to collect swarms. My swarm control is an integrated part of replacement colony provision. With this size of operation, the reader will readily understand my need for a simple and efficient method of swarm control.

The early influence on my swarm control system development was Snelgrove, from his book title 'Swarming, its Control and Prevention', and it is worth a brief review. However, all that remains of value for me is his division board.

The Snelgrove System

In the 1930's, the current thinking behind Snelgrove's system was based on the Gerstung theorem that an excess of nurse bees stimulated the swarming impulse. His response was to devise his division board (Figure 1) which allowed him to remove brood into an upper brood chamber away from the queen. The effect was to create an artificial swarm (with a minimum of extra equipment) directly above the main colony, with his division board acting to separate the two parts (see note 1 below). The clever bit was the multiple entrances in the division board. Flying bees from the top brood chamber which became accustomed to one entrance of the division board could be redirected into the bottom brood chamber to reinforce that (and vice versa). Very effective population control!

(1) Snelgrove describes the Artificial Swarm as the box with Queen in it. i.e. the Bottom box. But this is not relevant to this procedure. Mike Hill

Following Gerstung, Snelgrove had a quite rigid system of timing for the changing of entrances so that only when that brood had emerged and the bees had developed beyond the 'nursing age' and into foragers were they allowed back

into the lower and queenright brood box by means of the selectable entrance doors in the board. We now know that there is no such rigid relationship between the age of a bee and its function in the hive. Whatever flaws there may have been in the underlying theory for Snelgrove, we should all be thankful for his division board. It allows us to control the population of a swarming colony without the catastrophic population reduction of the loss of a swarm.

Current Thinking

A colony that is preparing to swarm can normally be deterred from doing so by removing much of the brood and most of the flying bees temporarily. Depopulation. Sounds obvious! The effect is not just transient, it appears to change the colony's 'mind' about swarming, much in the way that the onset of a strong nectar flow can. Hence the common current practices of shook and artificial swarming along with the abstraction of nuclei. However, these techniques require considerable extra equipment. To be able to do this with only a board and an extra brood box makes for efficient beekeeping. A simpler derivative of

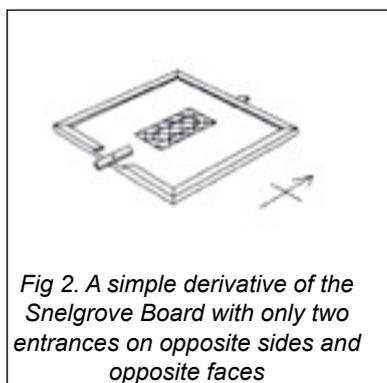


Fig 2. A simple derivative of the Snelgrove Board with only two entrances on opposite sides and opposite faces

an ordinary crown board. Using the board requires the separating of the colony, temporarily, into a queenright portion at the bottom with a queen less portion above. The queenless portion will, in due course, raise

its own new queen and the whole lot can then be reunited or split if expansion is required. I invite you to try it.

Timing

It takes about four weeks to get a laying queen from the date of the division. I use the board only on colonies that show definite signs of swarm preparation during the normal course of hive inspections. Since I clip my queens, this gives me 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 target flow or otherwise to use the new colony for expansion or replacement. A colony swarming as late as the third

week of May can be reunited well before the main flow in early July. However, the technique is equally 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 both deter swarming and reunite with a young queen at your leisure.

The Swarm Control Technique in Practice

It should be noted that the diagrams in Figures 3 to 6 are drawn to a constant orientation. To appreciate this will help with the understanding of the manipulations. I have chosen an initial north/south simply to help clarify the explanation. In practice, it doesn't have to be such, merely superimpose the manipulations appropriate to your initial hive orientation. What is important is where the bees are used to finding the entrance to that hive. Figure 3 shows the hive at the start of manipulations. The floorboard entrance is nominally facing south. The hive is stripped down to a single brood chamber. This brood chamber and floor board is now rotated through 180° so the entrance now points in the opposite direction, in this case, north. Half the brood frames are carefully transferred, with their adhering bees, into the spare brood box (later to be the top brood box), leaving

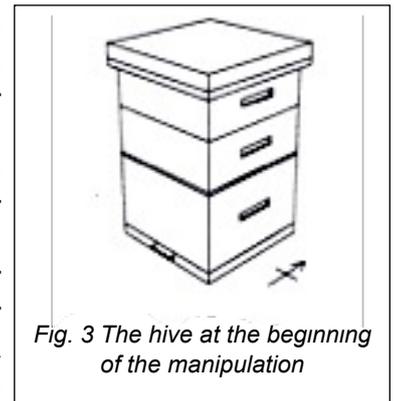


Fig. 3 The hive at the beginning of the manipulation

the queen behind in the bottom brood box and any queen cells left there destroyed. The brood frames containing stores are shared

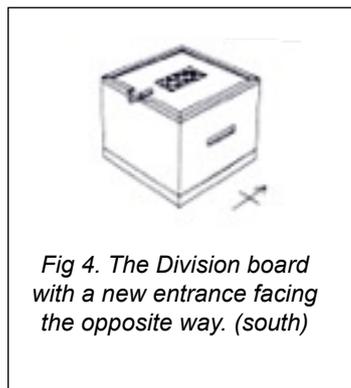


Fig 4. The Division board with a new entrance facing the opposite way. (south)

out so that the bottom box gets the larger proportion, for these bees are going to lose the foragers (and income) to the top box.

The proportion of young-to-sealed brood in both boxes should be roughly the

same. It is not critical.

Only one good, open queen cell should remain in the spare box. You are looking to leave a nice fat, well-provisioned queen larva there. Mark the frame with a drawing pin.

Young worker brood should be positioned close by. Both brood boxes are then filled with spare combs. If we started with a two brood box colony, the combs are just shared out as above. If you started with a colony that had not yet raised swarm cells, ensure that there are young larvae in the top box from which the bees can raise emergency queen cells.

The division board should have wire gauze on both sides of the Porter escape hole to minimise communication through the hole. This is not critical and a single gauze will do at a pinch.



Fig 5. The two brood boxes with the supers in place on top

the upper entrance with it facing south as in Figure 4. The spare brood box is now placed on top of the division board, with the queen excluder on top of that, as in Figure 5. The supers are replaced on top of this queen excluder followed by the crownboard and roof.

Two Separate Colonies

Now stand back and think what we have got? Two separate colonies on the same stand - a vertical split!. The bottom one with the queen is heavily depopulated and without flying bees. It will give up further swarm preparations and the queen will be brought back into lay. Its entrance now faces north and it will lose its current foraging force which are used to a southerly entrance. As new foragers emerge in subsequent days they will, of course, orientate to this new north entrance. The top colony has no queen but does have one good queen cell from which to raise a queen in due course. It also has the flying bees since these bees on returning to the hive to where they expect the entrance to be on the hive, don't find it. Bees will search much more easily upwards than they ever will sideways round the hive and, in going upwards, they enter the top colony to reinforce it. Any income is therefore going into the top and it is on here that we replace the supers, as in Figure 5.

NB. If you use Modified National boxes, use them 'warm way' otherwise the end indents and box top rails act as a barrier to bees searching and travelling upwards. Present them with the flat side where you need them to walk up. The whole process is a one-off operation and takes no more than 15 minutes.

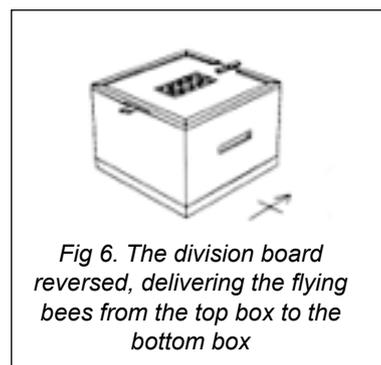


Fig 6. The division board reversed, delivering the flying bees from the top box to the bottom box

After Swarms

It might be thought that the queenless top colony might still attempt to swarm when its virgin queen emerges. Indeed, emergency queen cells will more than likely be raised in addition to the one swarm cell that was left. My experience is that they normally don't swarm even when left with the emergency queen cells.

If it concerns you, go in again five days after the split (and before the seventh day when your chosen queen will be emerging) and knock down any emergency queen cells. Be careful not to damage your chosen one.

Normal Inspection

The inspection cycle should continue as normal. The concern with the bottom colony is that it has sufficient stores. If necessary, put on a feeder and lift up the division board and top boxes to accommodate it. The bees walking up from the old southerly entrance will just walk on up a bit higher! Hanging frame feeders are a useful alternative. Should the bottom colony become unduly weak, flying bees from the top colony can be redirected below simply by turning the division board round through 180° and opening both entrances, as in Figure 7 (and rebuilding the hive, of course). Look carefully at the diagram and you will see that bees which are used to entering the top colony through the southerly entrance of the division board now go down instead of up. The new entrance for the top colony is then open on the north.

Careful Inspections

During the first couple of inspections, the top colony must be disturbed as little as possible when looking into the bottom colony. We always inspect the bottom colony first. We remove the roof and supers gently and stack these to the side, then lift off the top colony brood box as a unit with its queen excluder and the division board still attached. These are put on the stack of supers and not opened yet. The bottom colony is then inspected. The top colony brood box/division board/queen excluder unit is placed back in position above the bottom colony. We now look carefully in the top colony for the emergence of the virgin queen and, on subsequent inspections, that she is into lay. By and large, this avoids mixing the flying bees from the two colonies.

Reuniting

Once the new queen is laying well, she is clipped and marked and then the colonies are ready for reuniting. The quickest method is to replace the division board with a sheet of newspaper and let them sort out for themselves which queen they want to keep. Almost always it is the new one. (The cautious/nervous can go in and remove the old queen prior to uniting.) Alternatively, we leave the division board in place but remove one of the pieces of gauze over the Porter escape hole so that the two colonies can get to know each other again without fighting. At the next

inspection, the division board can be removed. In either case you will need to decide in which orientation you want the floor board. The easiest choice is where most of the bees are flying to. You can orientate the floorboard temporarily at 90° to both former entrances (ie, east or west, on the side), rotating it into your preferred direction a day later or at the next inspection. Before the expected flow begins, the combs from the brood chambers are rearranged to put all the young brood with the queen in the bottom box beneath the queen excluder. Combs of stores and surplus mature brood are put into the other box above the queen excluder and there function as an extra super.

Pollen Problems

Brood combs used for honey extraction are examined in front of a strong lamp. Those heavy with pollen (common in brood frames used for honey) are put aside to boost stores of weaker colonies. Darker brood combs are difficult to see through and if we extract combs that contain considerable amounts of pollen, the risk is that the pollen currently unsealed will go mouldy and hard, wasting this valuable protein and spoiling the comb. In this case, these extracted combs are given directly to less well-provisioned colonies by placing them next to the brood nest.

Variations and Opportunities

The system is flexible, the following being a few examples. • Simply split the two boxes off as two colonies. • Extract the old queen into a nucleus prior to reuniting. • More than one queen cell can be left in the top brood chamber and when these cells are mature the box can be divided into two or three nuclei. • Late swarming colonies can be left after the treatment to winter under one roof sharing their combined warmth.

Queen Raising using the Division 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. Simply split as before leaving very young brood in the top queenless half. As soon as they are raising emergency queen cells, reunite but with a queen excluder between the two brood boxes. Graft or cell transfer queen cells can then be raised continuously in the top box with the old queen continuing to lay in the bottom box.