

## **Roger Patterson Method of Colony Increase.**

I have used this method, or parts of it, for making colony increase for well over 40 years, but I doubt if you will find it in a book. It brings together into one basic method several manipulations that could be used in isolation. For ease of identification I have given the whole system my name, but as is well known, there is little new in beekeeping, just different ways of achieving the same result.

I like it because in my area of West Sussex, from one colony early in the year, I can usually produce around 10 colonies that are strong enough to go into winter. In other parts of the country it may be less, but the rate of increase should still be acceptable. It can be modified in many ways to suit the individual beekeeper and their situation, e.g. if you want fewer but stronger colonies, you can do it.

I have decided to write about it because I get frustrated at keep hearing and reading that in the U.K. we can't produce enough bees to satisfy the needs of beginners and that bee farmers need to import bees to make up losses. It seems to me their problem is they must have bees early, but with this method you can. It also avoids the possibility of importing pests and disease we haven't got, or having bees that are not best suited to our conditions. This is a simple method that costs little, but is very productive.

I refer to "colonies" and "nucs". In general I have used "nuc" soon after setting up, but "colony" when it is established, as I don't know how strong it will be.

### **In Summary.**

I know it is unusual to put the summary at the beginning, but there is a lot of information here and I don't want the reader to be confused or put off. It is very simple, but there are so many possibilities, hence the lengthy description.

All we are doing is starting with a strong colony in the spring. At intervals during the summer we are taking two nucs at a time off it, placing them at the side of the parent colony, then moving the parent colony some distance away in the same apiary. The flying bees from the parent colony are distributed between the two nucs.

When they have built up, the earlier pair(s) of nucs can have brood or bees removed to make up or augment other colonies.

### **The method.**

This method works because all the bees are kept in the same apiary and that is what I describe here. I move combs of brood and food between the colonies that have been made and I also bleed bees off some to populate others. It won't work so well in this form and it will need modification if bees are moved to an out apiary.

Like many things I do in beekeeping, this is part of my management system, where different bits fit together, but can be adjusted if needed.

I list below some of the things I do and the knowledge needed to make this system work well.

- There is a lot of movement of bees and combs, so you need to be able to recognise Foul Brood and know how to deal with it.
- I use brood boxes as supers, so most of my brood combs are drawn out from foundation above a queen excluder. When extracted, this gives me a supply of much better brood combs. When comb is placed in the brood box I get much quicker build up than I would if I used foundation. If a colony needs feeding I have combs of food available, without having to make syrup or wait for the evening to feed.
- Most beekeepers will have some empty used brood combs. These can be used if they are in good condition and the usual precautions are taken.
- I rear queens throughout the summer, so together with natural Q/Cs when available, I have plenty of queens or Q/Cs to use.
- A frame of brood becomes three frames of bees when it emerges. You can fairly accurately predict when you will get an increase in adult bees.
- If queens get mated fairly quickly you can set out a timetable with reasonable accuracy.
- At times there can be rapid expansion in some colonies, especially 3-4 weeks after a young queen has come into lay and she has empty comb available to her. The colony that is comfortable in a nuc box today, but has a high percentage of sealed brood, could be absolutely bursting in 7-10 days time.
- Sealed brood generates some heat and needs less bees to look after it than unsealed brood does. It also ensures quicker build up.
- The brood in a colony that is weak in bees may have poor nutrition, leaving it vulnerable to chalk brood & perhaps EFB. Keep colonies or nucs strong in bees.
- My queens are non-prolific and in general I keep my bees on single brood depth National boxes throughout the year. I guess that more prolific queens may allow you to make more colonies, but they may need feeding in poor weather in order to do so.
- If you swap places with colonies to divert flying bees from one colony to another I suggest caging the queen for 24 hours, otherwise the incoming bees may overwhelm her.
- If a hive is moved, with nothing left in its place the flying bees will disperse between the closest hives.

- A colony that has been recently made up, or has been moved with the intention of losing or gaining flying bees, will be out of balance for a time. After a full brood cycle the bees will bring it back into balance.
- A colony that is moved with the intention of losing the flying bees will be vulnerable to robbing in a nectar dearth, so always reduce entrances.
- Flying bees or a returning queen will be attracted to a colony with fanning bees, or the one that is fanning the most.
- I dislike feeding during the active season. My bees are frugal enough they rarely need it, but some of what is happening with this system, such as the removal of flying bees is false, therefore you may occasionally have a food shortage. I prefer to use frames of food from other colonies than feed.
- You will have a number of small nuclei. In general the smaller the colony the more variable the food situation can be, often going from the point of starvation to being packed out with food very quickly, if there is little unsealed brood and a nectar flow.
- Avoid placing a nuc in full sun, as the colony will struggle to ventilate it.
- My non-prolific queens will lay up a B.S. brood frame in about 2 days. This is useful knowledge when timing operations.
- Bees from two colonies will often fight, those from three or more usually won't.
- Don't inspect a colony that is near another where a queen may be on an orientation or mating flight. For safety purposes avoid inspection between 10.0am and 6.0pm. You may be a marker that wasn't there before and colonies that have been opened will be fanning, so may confuse a returning queen.
- Don't move colonies with a virgin queen in, for the same reasons as above.
- NEVER think that nucs won't swarm.

The above may seem daunting at first, but I have learnt a lot from observation and making mistakes. All I am doing is passing the information on to you, in the hope that you understand the reasons why I do things the way I do and how my management system has developed to allow me to be flexible.

In order to do something different from the "standard teaching" and develop your own techniques, you obviously need to know what bees are likely to do in response to your actions. That comes with a little observation, lateral thinking and experience, but you need to know what I call the "basics", i.e. life cycles, swarming process, disease recognition, etc. All beekeepers should know these anyway, but the skill and information gained by doing new things and making mistakes will help you modify this system of colony increase in a number of ways.

We are often told that bees do "this, that or something else", without variation. It is when you do manipulations like I am telling you here, where you can get two colonies that appear identical, you treat them both the same way and they respond quite differently, that you realise that bees don't always do as they are supposed to.

This system can be kept going throughout the summer, but can be stopped at any point.

The basic method has been demonstrated at the Wisborough Green BKA teaching apiary on many occasions. The good point about demonstrating something of this nature is that attendees can see the progress of colonies throughout the season.

In an attempt to make it easier to understand, I describe it in stages with diagrams and photographs to help you. If you don't understand something then don't abandon it, but keep going as it really is quite simple. It may pay to set it up on different slides on PowerPoint, where each slide is a stage or movement. I do give summaries of what has happened to help you.

I suggest starting at the earliest you can start rearing queens in the spring. This will depend on the year and the part of the country you are in. In West Sussex I can usually start in the first week in May, but in general a couple of weeks after drones emerge is usually O.K. If you hear of swarms in your area, then you can start. I can usually get queens mated well into September in my district, although I know many won't be able to.

I assume you want to get a maximum number of colonies during a summer, so I have gone for a best case. You may have to pull back a bit depending on the availability of Q/Cs, your needs or the success of queen mating.

**What do you need?** No specialist equipment needed.

- A full strong colony with plenty of sealed brood. One that is preparing to swarm early is ideal, as you can use the Q/Cs if the colony is good, but this is not essential. If you want the maximum number of colonies during the summer this colony needs to be bursting with bees when you start, with no restriction on space to hinder the queen. The colony needs to be queenright at all times if possible.

For best results I suggest identifying the colony in March. Very often in Spring in my area I get a few days of warm weather where the bees bring in quite large loads of nectar and pollen. If they are short of vertical space they will pack the income around the brood, preventing the queen from laying outside it, so restricting spring build up, which is a major cause of early swarming. To avoid this, you can do one of two things, put two supers on, or add a brood box of comb under the existing brood box. Underneath is preferable to above, as bees naturally expand downwards and will be less restricted. This needs to be done way before you would normally think of supering.

There is no need to use prolific queens or do any "stimulative" feeding unless you want to. Just let the bees expand as they would naturally, but of course they shouldn't be short of food.

- A number of nuc boxes and full hives. I like my own design of nuc box, where I designed out most of the problems I found with other designs. In reality it doesn't matter what you have, providing they are fit for purpose and satisfy your needs. They won't be going off-site, so the condition and weight doesn't matter. Poly nucs are O.K. - well, sort of, but I find so many faults with them that I now only use them in an emergency.
- Temporary stands for putting nuc boxes on. These could be anything that is discarded, such as milk/bread/beer crates or supermarket baskets. Please remember these belong to someone, unless you find them in a skip.
- Spare brood combs or foundation. I much prefer the former, which is why I have them drawn out in brood boxes that are used as supers.
- Queens or Q/Cs. I prefer the latter, because I often use the nucs that are created for queen mating nucs. The life cycle of workers is around 21 days, but a young queen will lay up most of the combs in the fairly small colonies in 7-10 days, meaning that she is doing little for 10-14 days, until that brood emerges. She may as well be removed and used elsewhere for requeening poor colonies. If a ripe Q/C is given soon after the previous queen is removed, the new queen should be laying soon after the brood has emerged.

I only advocate using "local" bees and would never advise purchasing queens from commercial sources. You need a supply of Q/Cs and I find it best to run this in conjunction with a bee improvement/queen rearing activity, so all your new colonies are headed by potentially good queens, not poor ones.

If a Q/C fails to result in a laying queen, then give a fertile queen, as another Q/C will set the nuc back too much.

- You may need occasional help from other colonies, e.g. frames of food or brood.

That is all you need apart from a bit of luck with the weather, enough knowledge to manage the situation and a good positive attitude to make the best of the opportunities presented.

As with a lot of things in beekeeping there is a warning! Please DON'T blindly follow what I write. This is not "beekeeping by numbers", it is a basic system where I give you the best case - you will have to modify and adjust to suit conditions and circumstances. It may be the weather is bad for 2-3 weeks, meaning that foraging is poor and queens are mated later than expected, as often happens in our fickle climate.

For simplicity I will describe the operation as if the parent colony is always queenright, with Q/Cs, not queens, always going into the new colonies that are created.

There are many options, but I will cause confusion by describing them all, so you must rely on a bit of imagination and your own knowledge of what you can do and how the bees are going to react.

It doesn't matter at what time of day the various operations are done, but it is better if there are still 2-3 hours of good flying weather left, otherwise there could be an imbalance when bees fly the following day when you aren't there. It is best if the bees decide where they are going before they stop flying for the day.

Some of the nucs that are made, especially the earlier ones, are similar to what I call "2 frame nucs". For further information on these see Dave Cushman's website

<http://www.dave-cushman.net/bee/twoframenuc.html>

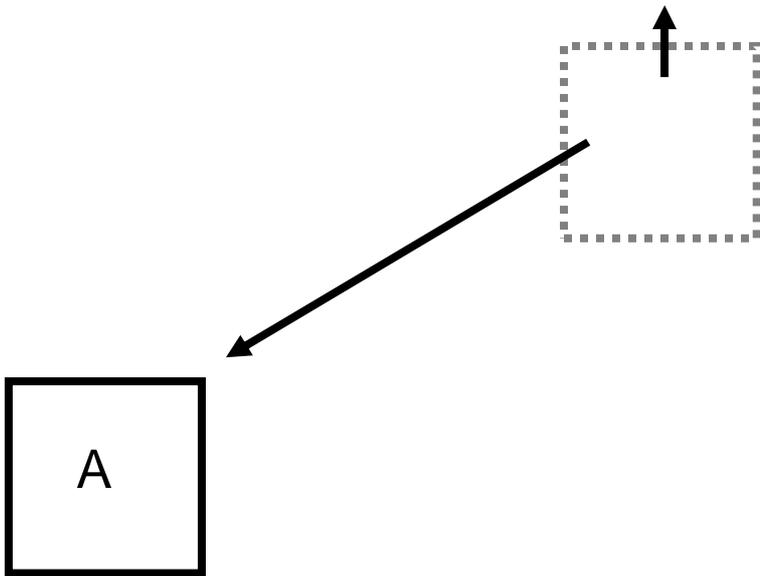
Throughout this article I will call the original colony "A" and the nucs created at the same time as "B1" and "B2", "C1" and "C2" and so on. Colony "A" may be on single or double brood. I don't use "brood and a half", but I see no reason why you can't use that too.



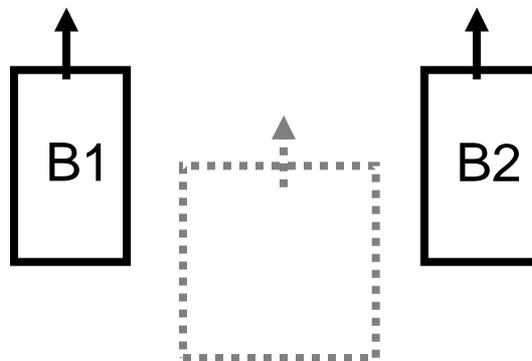
Parent colony "A" needs to be strong in brood and bees.

**Stage 1. Setting up the first round of nucs.**

- a) Move colony "A" to one side or to the rear as below. This needs to be 10 feet or more away. The entrance direction doesn't matter.



- b) Place 2 empty 5 frame nuc boxes (or full hives) "B1" and "B2" at the side of the original hive "A" as below. I prefer slightly in front, but it doesn't matter.



- c) In "B1" and "B2" create what I call a "2 frame nuc" from "A". This is one frame of largely sealed brood + adhering bees + one frame of stores. The more brood in the brood combs the better, as this will increase the size of these colonies significantly, which will be a great benefit later. The food combs can come from another colony, but without bees. The queen MUST stay with "A". See her - don't guess it!



One good frame of largely sealed brood well covered with bees.



One frame of food both sealed and unsealed. If filled both sides like this it will keep a newly made up nuc, as described, going for a couple of weeks if there is no income.



If there is brood on the food comb such as here, the brood is better if it is sealed.



Two nucs in the process of being made up. They are in my own design of nuc box.



Photo taken at the Wisborough Green BKA teaching apiary in June 2015.

The two nucs in the front have just been made up from the parent colony, whose stand can just be seen behind the front nuc box.

The parent colony has been moved out of the photo to the right.

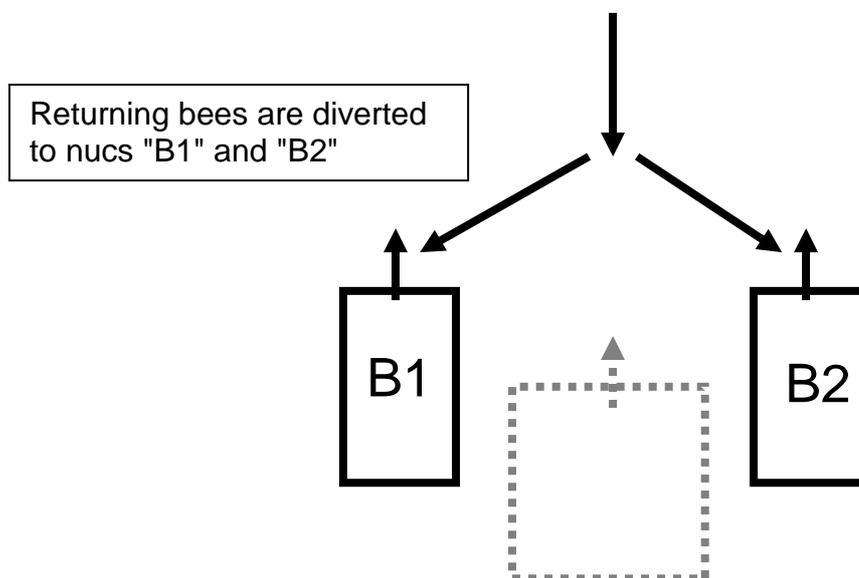
- d) Fill boxes "B1" and "B2" with comb. Nuc boxes MUST be filled, otherwise if there is a nectar flow any space will quickly be filled with wild comb, which is a nuisance.



Wild comb built in gap where frame was missing, as arrowed.

- e) Make sure "A" has enough stores, as they will lose flying bees, so won't be able to forage for a few days.
- f) To replace the two frames of brood in "A", put two empty combs in the middle of the brood nest for the queen to lay up. In normal circumstances I don't advise splitting brood in this way, but comb is less of a problem than foundation because the queen can lay in it more quickly and you will be checking the colony regularly anyway. Even though the colony has lost it's flying bees these two combs are normally laid up quite quickly. One alternative if you are concerned is to temporarily "park" a couple of frames from "A", without bees, in another colony and put the two empty combs in 4-5 days before taking off nucs "B1" and "B2", when colony "A" still has the flying bees. The "parked" frames can replace those removed. Another alternative is to put the empty combs in another colony for their queen to lay up. There are many options!
- g) Replace the two food frames with empty combs in whichever hive they were removed from.

h) Returning foraging bees from "A" will come back to the original site, but are unable to find the hive. They will go into the closest hive or nuc, quickly favouring the one which is fanning the most (say, "B1"). This will cause imbalance. If you see this happening, then move the one ("B1") that bees are attracted to the most sideways a few feet for a few minutes, so returning bees are diverted to "B2". When "B1" and "B2" are fanning equally, move "B1" back. You could also cover up the entrance for a few minutes with the roof. I often find less trouble if "B1" and "B2" are made up before moving "A", perhaps because both are fanning equally. This part is very important and needs attention, otherwise one will be very strong, the other very weak. Having said that there may be situations later where a stronger one may be a benefit.



i) Give "B1" and "B2" a ripe Q/C each. If within about 4 hours of splitting I would protect it, otherwise insert it as it is. Protect if you want to be safe.

**Stage 2. About 3 days after Stage 1. This should be done for every nuc that is made.**

Do a quick inspection to see if the queen has emerged. You may have to remove emergency cells. Look for the virgin queen if she has emerged to check her wings are complete. This is important, as a significant number emerge with deformed wings, so are unable to fly. Leave alone for 14 days, then look for eggs.

"B1" and "B2" can be moved about 3 feet/1 metre at a time for 3-4 days after making up, but not when the queen is likely to be on a mating or orientation flight.

**What have we done so far?**

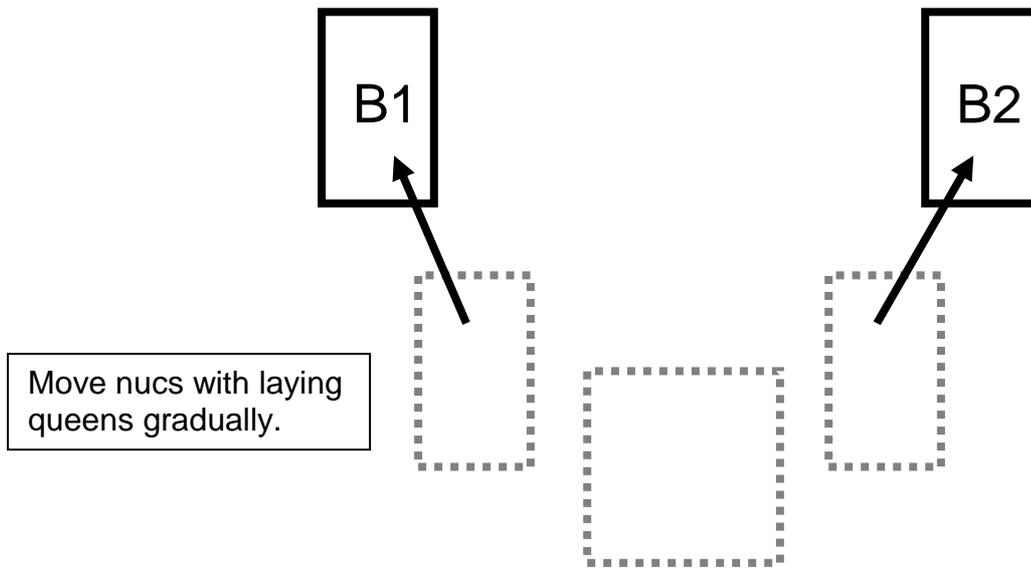
- We now have 3 colonies, parent "A", nucs "B1" and "B2". It is important that all these are strong if possible, "A" because it needs to populate further nucs, "B1" and "B2"

because they may be needed to augment later nucs. If the colony is weaker than desired, then either make the nucs weaker or only produce one.

- Parent colony "A" has been moved. It has only lost a couple of frames of brood and the flying bees. If the operation is done early in the season it will soon recover and can possibly be supered. You will find that within a few days they are flying almost as if they haven't lost any flying bees, because they will adjust their tasks to compensate for having lost their foragers.
- Two nucs "B1" and "B2" have been made from "A" and placed close to the site where "A" has been moved from.
- "B1" and "B2" will collect the flying bees from "A".
- "B1" and "B2" are given a Q/C each.
- It is helpful to keep an eye open for the first few hours. The main thing to go wrong is the imbalance of bees in "B1" and "B2". The quicker you can adjust it the better and if there is equal activity at the entrances within 10-15 minutes it usually works well.
- We have done a similar manipulation to an artificial swarm, apart from losing an extra comb of brood from "A", leaving the queen in the "wrong" part and created two extra colonies instead of one.

The two nucs "B1" and "B2" will need careful watching, depending on the weather and forage. The boxes are usually quite full of bees, mainly flyers, and with no young brood to feed. If there is a nectar flow they can store it at a very rapid rate, so they may need transferring into full brood boxes and filling up with comb. When the queens start laying they may need the combs moving to give them space to lay in. In my experience they usually lay in 4-5 combs quite quickly, perhaps in 8-10 days. This means a massive increase in worker population within 5-6 weeks of the colony being set up.

When the queens have mated in "B1" and "B2", I move them at the usual 3 feet/1 metre a day away from their position. I keep them fairly close if I can, perhaps 10-12 feet/3 metres apart, which is handy if I want to split them, milk off flying bees or unite later. If they are too far apart it cuts down my options.



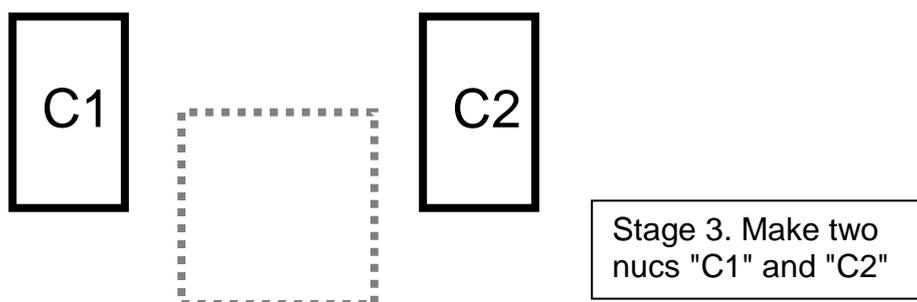
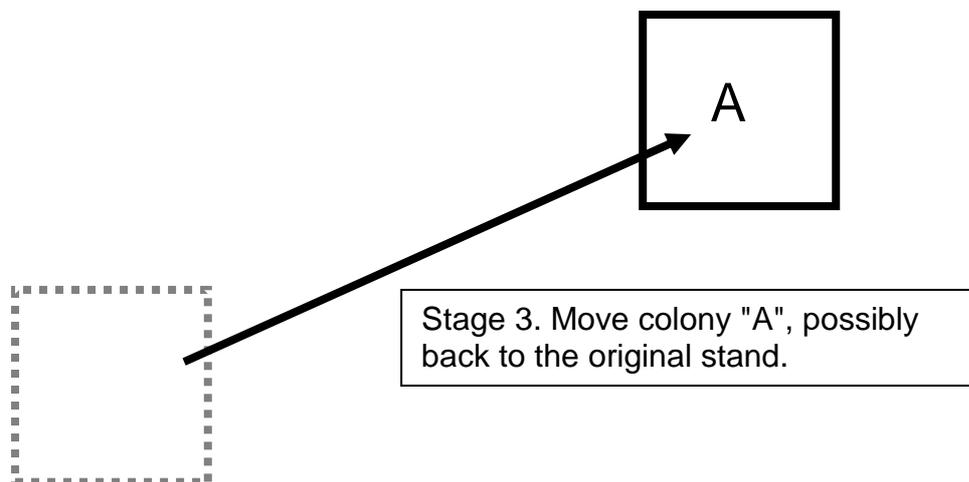
**Stage 3. This is also relevant to subsequent stages.**

We are repeating Stage 1 here, where we are taking off another two nucs "C1" and "C2" and moving "A" several feet away. This could be back to the original stand. You need to be careful about the timing, making sure not to leave "A" short of brood or weak in bees, otherwise there will be a knock-on effect for the rest of the summer, with recovery being slow. You need "A" to be strong at all times, as it will have brood and bees milked off it several times during the summer. If it is weakened too much you won't get strong nucs. Every time you take two frames of brood away from "A" you will be replacing with comb. The queen will lay in this quickly, with the vast majority of brood being within 3-4 days of the same age. With this knowledge you can manage the situation. In simple terms, using these frames of brood for the next two nucs will mean the nucs being stronger when it emerges, yet if they were left in "A" a few days longer then "A" would be stronger. Don't forget that when they emerge they should provide about six frames of bees, wherever they are.

In favourable conditions I have done this manipulation 20-21 days after Stage 1 if "A" is strong, but if "A" is a little short of adult bees it may be better to wait until about 25-30 days after Stage 1. This will allow these two frames of brood to emerge.

Because the brood in the two frames of comb I insert to replace those that are removed is much closer in age than other combs, this makes it easier for me to plan.

Depending on the weather and nectar flow "A" may require supering. If so, don't delay, as you may crowd the queen out and possibly start the colony building swarm cells. This can be with a brood box of foundation if you wish, so providing frames of food. I am in an oil seed rape area, so if the weather is good they will often build these out and fill them.



### **Now what have we got?**

This should be 3-4 weeks after we started Stage 1, possibly end May/early June.

- Nucs "B1" and "B2" from Stage 1 should have laying queens.
- They have been moved progressively some distance away, but still fairly close together.
- They should have been transferred into full hives.
- When the first combs of brood from the queens emerges these colonies should be quite strong.
- Parent colony "A" has been moved, possibly back to the original stand. It has had "C1" and "C2" taken from it, with the flying bees distributed evenly.
- We now have 5 colonies in total.

### **What happens from now on?**

Depending on the district and the summer you may get a further two rounds of nucs from "A". This gives 8 nucs made from the main colony during the summer.

With a little care "A" can often be split into two at the end of the summer. At least one half will need a young mated queen introduced, so she can lay straight away. If the original queen is still laying well she can be retained, but if she is reducing laying she can be replaced with another young queen. If she is otherwise good, then use her to replace one of your poorer queens.

In about 6 weeks from making them up "B1" and "B2" should be in a position to help the later nucs in a number of ways including:-

- Splitting to provide two further nucs.
- Having frames of brood removed to make up further nucs, but put in the position of later nucs, e.g. "C1" and "C2" to collect their flying bees.
- Placing nucs from "A" in the positions of "B1" and "B2" to take flying bees instead of taking them from "A".
- If there has been a nectar flow there will probably be several combs of food. These can be used for other nucs and be replaced with drawn comb in the middle of the brood nests.



Nucs "B1" and "B2" can build up quite fast. This one should have already been transferred to a full box .

At this stage it can have a comb of brood or food removed to make another nuc, or it can be moved away, with a new nuc put in the position to take the flying bees.

### **At the end of the summer**

Early August is the latest I normally make increase. You can go on later, but if there is no nectar flow you may have to feed and robbing from bees and wasps may be a problem, especially with small colonies that may be queenless, where they may lose morale.

You will have colonies varying from perhaps 2-3 frames to full size. Once you have stopped making increase you should be looking at strengthening the weaker colonies. If it is reasonably healthy, a 5 frame nuc that is strong in bees has as good a chance of overwintering as a full colony, so that is the minimum to aim at, although it is always worth giving smaller ones a chance, especially if the frames are densely covered in bees, or the queen is good. If you have weak colonies you could take the risk, or unite. I have wintered 3 frame nucs that are well covered with bees on many occasions. They have a far better chance of survival than 5 or 6 frame nucs that are poorly covered in bees.

I wouldn't change places with colonies to pick up flying bees at this time of year, otherwise you may set off robbing.

You can take combs of sealed brood without bees from the larger colonies one at a time and put in the smaller colonies, perhaps every 7-10 days. This soon builds numbers up and of course they are young bees.



A healthy and well provisioned 5 frame nuc that is strong in bees has a good chance of overwintering.

## **In conclusion**

I work with non-prolific bees and in most years the above is usually achievable without feeding. I suspect that more nucs can be taken from "A" if it had a prolific queen and was on a double brood box, but in a poor season feeding may be required. In this case you could either shorten the time between taking off nucs, or take off three nucs instead of two. Instead of placing them at the side of the original position of "A", place them radially, as in the Cloake method (sometimes erroneously called the Vince Cook method).

This method is very flexible and can easily be modified to suit varying conditions, effectively you can make it up as you go along - I do! Please remember that I have given you what should happen. If you stick rigidly to it you may have the odd failure, so tweak things in response to the bees and the weather.

I must now come clean and tell you that I often cheat a bit, but I have given you a few hints! If I have given you the impression that everything comes from the one original colony "A" it doesn't always! I treat my beekeeping as a whole enterprise, so I use other colonies if I have the opportunity. An example is if another colony or two can afford to lose a frame of sealed brood or food, as they often can, I will make up a nuc with them and put them in the position of an existing nuc that can afford to lose flying bees, e.g. "B1" and/or "B2".

I hope I have shown that it is so easy to increase the number of colonies and there is no need to buy bees. I think it will benefit local BKAs who might otherwise buy bees from commercial sources to supply beginners.

The cost is very small and it is a brilliant teaching opportunity for your members. You can demonstrate a number of things including making increase, uniting, moving colonies to take/lose flying bees, adding/removing brood and rearing queens. You will have noticed that all of this has been done in the same apiary without the need to shake in extra bees, plug up entrances with grass or place vegetation in front of hives.

Once you have got the colonies through the winter you can take nucs from them the following year to supply your beginners.

If you need to make much larger numbers then simply start with more colonies. You will probably find that more colonies will give you more options, so more colonies in ratio.

I hope I have made this method easy to understand and that I have encouraged you to produce a larger number of colonies than you thought you could.

Roger Patterson. 26<sup>th</sup> August 2015.

This article is intended for display on Dave Cushman's website [www.dave-cushman.net](http://www.dave-cushman.net) that is considered by many to be the world's most comprehensive beekeeping website.