

The plan was simple, like my brother-in-law Phil. But unlike Phil, this plan just might work.

-- *Style Invitational Report (Washington Post), week 120*

By now we've gotten a handle on how to keep a couple of colonies alive year after year. (See September 2014's [Controlling Winter Losses](#) for a few essential tips.) We are ready for a couple more, both as a way to buffer the impact of occasional yet inevitable colony losses and to get even more honey. In beekeeping, if we aren't moving forward then we end up falling behind. Adding colonies to our bee yards, what the old timers call "making increase", is the way that we, at the very least, maintain our colony numbers. There are many, many ways to do it. We'll go over just a few here, ones that I have found to be easy for a hobbyist like me.

Options for increasing our colonies

Should we buy more packages, nucs or full-sized colonies? Well, in Eastern European folklore it is bad luck to buy bees. So let's not do that, at least not as a first option, especially if we are of Eastern European extraction. We don't want to jeopardize any good luck we may have.

Why don't we catch swarms or do cut-outs? It's great when they fall in our lap, but as December 2014's [Free Bees](#) explains, the availability of swarms isn't reliable and cut-outs are a whole lot of work.

Instead, let's make splits! Not the kind with ice cream, bananas and cherries, but the kind with bees. That way, we control the timing and number of new colonies as well as a little bit of the genetics. And for the most part, it is either free or fairly cheap!

What's a split?

A split is simply a new colony that is made by taking frames of bees, stores and brood from an existing colony and putting them in a new hive. How many frames we "steal" from the existing mother colony is a judgment call and is entirely up to us. We can make 50/50 splits, literally splitting the mother colony in half, or



A split made with six donor frames and filled out with new foundation.

skimpier splits where we remove, say, five frames. Or even better, we can take a single frame from several mother colonies and combine them to build a nice fat split while hardly reducing the donor colonies at all.

The goal is to end up with daughter colonies that have sufficient resources to grow into full-sized colonies within a reasonable amount of time. So splits can be smaller earlier in the season, but they'd better be fairly large if we make them after the spring flow ends. Not only will strong splits need less time and effort to build up before fall, but they will be better able to fend off robbing attacks during the summer dearth.

Split basics

The first thing we need to make a split is one or more strong colonies to use as parents or donors. As in medicine, we should always remember the dictum, "*Primum non nocere*" ("First, do no harm"). There isn't much point in fatally damaging a colony in our attempt to make another one. Don't divide up weak colonies leaving far weaker ones.

If we are one of those people who is good at planning and thinks well ahead, we can boost our donor colony populations in advance of making splits by feeding protein (pollen or pollen substitute patties) starting in late winter (mid January/early February). We'll also need to feed sugar syrup in tandem with the pollen/pollen substitute and we will need to keep it up



5-frame nuc box with a robber screen. "Home bees" quickly learn to enter and exit via the opening at the top. But robbers and other strangers follow the hive smell and try to enter at the bottom, where they are kept out by the screen. An easily guarded one-bee-at-a-time passageway at the bottom allows a virgin queen to exit and reenter.

continuously. If we artificially ramp up brood rearing and then slack off on feeding, creating a protein deficit in the brood nest, the bees will cannibalize the surplus eggs and brood to fill the shortage, starting with the youngest first.

So how strong should a colony be before we split it? Or more properly, how many frames of bees and brood should we ensure are left in the original donor colony? The answer to this will depend on the time of year and our goals for the post-split colony. If it is early spring and we want the parent colony to give us a large honey crop after the split, then clearly we want to leave it with as much brood and bees as possible. If the honey flow is over and we have plenty of drawn comb to give both the split and the parent colony, then we can be more generous with what we remove from the donor. Everybody will have a different answer about what they are comfortable with, but if we have, say, six or seven frames full of brood in early spring, we clearly can remove a couple of them without risking the long-term survival of the donor colony. We can certainly make splits from colonies with fewer brood frames too, but always consider the strength of the colony we are leaving behind. And don't forget, it is perfectly okay to take a single frame from several different colonies and combine them into a nice strong split. One might think that if

we mix up strange bees like that they will all kill each other, but interestingly enough, they don't.

Before leaving this topic, an important consideration is that the new split must have enough nurse bees to care for the brood that we have given it. Not only do the nurse bees need to feed the larvae but they must keep the brood nest warm. Check the long-term weather forecast before making splits. If we are facing freezing nighttime temperatures, brood can easily chill and die if the split is skimpy on nurse bees (few nurses per egg/larva/pupa). Ambient temperature becomes much less of an issue once we put freezing nights behind us.

Timing

Aside from the factors already alluded to that should be included in the decision to make splits (colony size, temperature, build-up time before dearths, beekeeper goals), a critical timing consideration is the availability of queens. For example, there is no point in making splits in December because commercial queens are not available for sale and there are no local drones to mate with a virgin queen that a colony makes itself.

Generally, queens are available for sale beginning in April and continuing until early fall. It is no coincidence that the same is true for the availability of drones to mate with locally-grown virgins. In fact, if a colony suddenly produces a large number of drones, that's one sign that swarming is imminent. Those drones aren't being produced to mate with that colony's virgins, but they are intended for the rampant bee sex that will soon be busting out everywhere.

All that said, the best time for making splits, from the bees' perspective, is obviously swarming season (primarily April and May). That's when they do it! Food is abundant, populations are on an upswing toward a yearly high, the weather is wonderful and there is a very long time left to prepare for winter.

Equipment

Aside from bees, the second thing we need

to make a split is something to put it in. Nuc boxes (half-sized boxes that hold five frames instead of ten or eight) are an obvious choice but they are not required. If our goal is to create another full-sized hive, going first into a half-sized nuc box is a bit silly, or at least unnecessary. In that case, let's treat a five-frame split exactly as we would if we had purchased a five-frame nuc: put it in our full-sized box with either drawn comb or empty foundation taking up the empty space. Add additional boxes as the population grows and comb is drawn out and filled.

However nuc boxes are a great option if our goal is to:

- create nucs for sale
- have spare queens and bees on stand-by "just in case"
- we are making many splits, don't expect them all to make it and are short on full-sized equipment

Regardless of whether we go with nuc boxes or straight into full-sized equipment, we'll want to use either an entrance reducer or a robber screen on the entrance. We will also need a feeder (see the section "Which Feeder is Best?" in October 2014's article, "[A Few More Overwintering Tips](#)").

Different types of splits

Making a 50/50 split where the queenless section raises its own queen

Assuming the mother hive is composed of two 10-frame deeps, put one of the deeps on a new bottom board in a new location. Despite what you may see on You-Tube, it doesn't need to be far away. Equalize the stores (honey and pollen) and especially the brood. Ensure that both sections of the split have eggs, day-old larvae and capped pupae. Feed both with sugar syrup.

That's it! We don't even need to know where the queen went. The section with the queen, whichever one that may have been, will chug right along as before. After a week, you'll still see eggs and very young larvae in this section. Meanwhile, the section without the queen will raise a new one. After the initial

batch of brood matures in that hive, we won't see new eggs or larvae until the new queen begins laying, up to a month after we made the split. See April 2014's [I Need to Buy a Queen... Or Do I?](#) for a discussion of this twilight-zone period, during which the colony will appear to be queenless.

Making a nuc with a store-bought queen

From one or more donor colonies, take a frame of pupae with emerging brood, one frame of pupae and/or mature larvae, two frames full of nectar/honey and pollen and a frame of empty drawn comb. Add additional nurse bees, shaken from brood frames, as needed to cover the brood comb. Install a store-bought queen as usual.

Proportions of brood/stores/empty comb may vary as long as the overall objectives are met; this isn't brain surgery! We want sufficient stores to support the bee population, enough bees to warm and feed the developing brood and enough brood to emerge and prevent the bee population from dropping below a critical level before replacements are raised. We want enough empty comb for the store-bought queen to have a place to lay right away.

Making a nuc with a home-grown queen

For a nuc with a make-your-own queen, make it up as you would for a store-bought-queen nuc but instead of worrying about a frame with empty comb, replace that with a frame with eggs and day-old larvae. Make doubly sure that we are giving the nuc plenty of fresh pollen and lots of extra nurse bees.

Some people will say that a queen raised by a small nuc will be inferior and will soon be superseded. Whether that is true or not, my opinion is that I don't care if she is superseded once she establishes her own colony. In fact if she isn't tip-top then I hope she will be replaced. The result is the same: I'll have a new colony which will soon be headed by a decent queen. Supersedure is not a bad thing and is not disruptive the way that swarming is.

The drawback to the make-your-own queen scheme is the time it takes before the new

colony is growing again. It will be about a month before we see larvae from a split-made queen and another 3 weeks before those larvae emerge as adult bees. However if we aren't in a hurry, the advantage of this scheme is that we save \$30 or so on the purchase price of a queen. Even more important, we'll only make split-queens from colonies that we consider worthy of replicating (gentle, good producers, etc.), so we will have some degree of control over the results. Half of the genetics (from the drones) will be a wild card but that's not a complete gamble.

Making splits using swarm cells

If you have a colony that has made queen cells (not just empty queen cups that look like acorn caps, but cells with larvae/pupae), then making a split is a great way to attempt to salvage the inevitable upcoming swarm. If the colony hasn't yet swarmed, find the old queen and move her to a split in a new location. With luck, this bunch of bees will think that they've already swarmed with the old queen ("What happened? How'd we get here? Oh well."). Likewise, the bees that you leave in the old location with swarm cells will hopefully think that the swarm has already left ("Where'd everybody go? I must have missed the memo!"). They'll go about their business making a new queen. (DO NOT include swarm cells in the split that you move with the original queen.)

It is important to remember that once the colony has made queen cells, they are dead set on swarming. If we make a new split with frames of swarm cells and leave the queen in the original spot, most likely the colony will swarm anyway, despite the fact that we have reduced the colony population. If we remove all the swarm cells and the colony still swarms, the original mother colony will be left with no queen and no means of making another one.

Note that a swarm will leave anytime that suits them after the first swarm cell has been capped. So by the time we see swarm cells, it may be too late to prevent the old queen, along with half or more of the workers, from heading



These capped queen cells will become the center of a new colony.

to the hills. However they should have left the makings for a number of new queens, already well on their way in development. These will be choice queens because they were raised at the height of the colony's prosperity, with the best nutrition and care that the colony had available. It is likely that swarm cells will be on several different frames; each frame with a queen cell can be used as the core of a separate split. Or if there are many capped queen cells on the same frame, they can be carefully cut out and affixed to comb in new colonies (unless the frame has plastic foundation).

Do what works

My off-the-cuff formulas for making up splits and nucs may differ from someone else's, and that's okay. Do whatever works. Within very broad boundaries, just about everything works. The key to success isn't the specific formula that we follow, instead it is knowing what a new colony will need to get off to a good start and then providing it. That includes providing sufficient time to develop as well as adequate and appropriate resources. Give it a try and see what works for you.

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