

5 Easy Steps

SPLIT MY COLONY?

Splitting, or dividing colonies is a common practice for beekeepers to help prevent swarming, and is an excellent tool to increase colony numbers and compensate for previous Winter losses. Swarming is a normal sign of a productive and strong colony, but it can pose a problem for many beekeepers and severely depress honey crops due to loss of bees. Swarming is when the queen, along with the majority of worker bees, leave to establish a new nest, for example in a neighboring tree or shed. Despite the many tools available to prevent swarming – including creating additional space with supers and removing queen cells – the most reliable tool is to split a colony before it swarms. Peak swarming season coincides with peak floral bloom during Spring, as lengthening days and ample floral resources stimulate brood rearing, which can lead to overcrowding inside the colony. Early Spring is the best time to perform splits, which in temperate regions typically occurs in April or May. It is not uncommon to split during Summer to prevent a small secondary peak in swarming coinciding with the onset of fall blossoming.

Splitting a colony can be a daunting task, particularly for beginners. Here are step-by-step

instructions for a simple technique to split a colony, without needing to move or shake frames of worker bees. This technique involves five steps: (1) deciding when to split, (2) equipment prep, (3) finding the queen, (4) splitting the colony's resources (pollen and honey), and (5) switching locations. I have also included a sketch that illustrates this splitting protocol.

Step 1 – The biggest challenge of splitting a colony is knowing exactly when to split. Colonies begin swarming preparations weeks in advance and if you know what visual cues to look for, you will know when to split. These include colony congestion, presence of queen cells, drone brood, and increased flowering intensity. However, waiting for all of these cues to be evident runs the risk that the colony swarms before you can act. Many beekeepers split early in the season, about four to six weeks prior to the peak floral bloom. This allows ample time for bee populations to build up and produce enough honey for harvest. If you are splitting a colony before queen cells are present but you don't have access to a queen or queen cell, it is not uncommon to let the bees rear a queen from worker eggs. Nonetheless, a common mistake is to split a colony that is too small; it is advisable to

wait until the colony is at least two, preferably three, hive bodies tall and seems crowded.

Step 2 – Once you have decided it's time to split, the second step is to gather your equipment including a smoker, hive tool and an empty hive. For the specific method outlined here, it is important to split on a sunny afternoon (above 50°F) when the bees are active. This ensures enough bees are foraging (see step-5), plus the bees will be relatively gentle and the queen easier to find. To make the transfer of frames easier, I set up the empty hive close by the colony that I will split.

Step 3 – Now you will need to find the queen. Finding the queen takes experience and can often be difficult for beginners. Two options to make her easier to find are (i) a few days in advance, find and place her in the top or bottom super with a queen excluder or (ii) marking her with a paint marker (purchased at a local office supply). Once you have spotted the queen, move her along with the frame she is on to the new colony (*referred to as "daughter colony") to prevent injuring the queen. While searching for the queen, be careful not to damage any queen cells. These are typically found along the bottom edge of the frame, but it's not uncommon to find them on the faces of comb. You may see anywhere from five to 25 queen cells in a colony at one time.

Step 4 – After moving the queen, you should divvy up the original colony's (*referred to as "parent colony") resources (pollen and honey) equally between both colonies. I would not attempt to shake or remove bees from the frames as this will agitate them. Be sure to retain all the brood and queen cells in the parent colony; if a queen cell is placed in the daughter colony with the laying queen, it could stimulate a swarm.

Step 5 – Now you will have to switch locations of the colonies, placing the daughter colony in the same location as the parent colony. Because the majority of bees remained with the parent colony,



(a) The queen and about 60% of workers leave en masse and cluster on a nearby object, such as a tree, before finding a suitable nest. (b) A colony occupying an abandoned shed near Harrison Valley, PA. (photos by Katy Evans)

the daughter still has relatively few bees. After moving the daughter colony, its population will quickly rebound since the foragers – which comprise about 1/3 of the colony’s population - will return to the exact GPS location where the parent colony had been. Provide the daughter colony with empty frames and a super to allot more space for the queen to continue laying and foragers to store resources. The majority of bees that remained in the parent colony are nurse bees that have yet to leave the hive and make their orientation flight and, therefore, will return to the new location that you choose for the parent colony, whether it be the same or a different apiary. As adult bees emerge, the population should grow and a new queen will soon begin laying.

At this point, you can leave the parent colony to rear a new queen or alternatively introduce a queen cell from another colony or a mated queen with specific genetics. If introducing a new queen cell, you should do it immediately. If introducing a mated queen, wait three full days before doing so and remove any existing queen cells, otherwise the bees could reject her.

It will take on average three weeks before you will spot eggs, so it is important to be patient. If the weather does not permit foraging or you are splitting early before full floral bloom, supplemental feeding is recommended. Feeding can be done by adding frames of honey or alternatively by using a mason jar, chicken feeder or a division board with sugar syrup.

More details about swarming biology and a step by step animation

Four visual cues that indicate it is time to split include (a) colony congestion (photo by Katy Evans), (b) presence of queen cells (photo by Nick Sloff), (c) drone brood (photo by Nick Sloff), (d) and intense flowering (photo by Katy Evans)



A marked queen. In general, it is easier to find a marked queen and allows you to monitor her throughout the course of the season. A paint marker can be purchased at a local office supply. (photo by Katy Evans)



Purchased queens commonly arrive in a three-hole Benton queen cage along with two or three worker attendants that feed and groom her during transit. (photo by Nick Sloff)



A congested colony indicating that it is time to split. (photo by Katy Evans)

Capped queen cells resemble a peanut in which the queen emerges from the tip. They are usually found along the bottom edge of a frame. A colony can rear as many as 25 queen cells. (photo by Nick Sloff)



Examples of methods to feed a colony including a chicken feeder (a) and a division board (b). With division boards, it is best to include an object that the bees can land on so they do not drown (e.g. ladders or styrofoam balls).



of splitting can be found in the video “Colony Division: an easy method to split a colony: www.extension.psu.edu/colony-division-an-easy-method-to-split-a-colony. Good luck and happy beekeeping!

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**In the video I refer to the parent colony as “original colony” and daughter colony “split”.*

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