

How to find the Queen

“First find your queen”. How often is this instruction given as a prelude to a variety of beekeeping manipulations? It is a phrase, which strikes dread into the heart of the novice, and even leaves “old hands” with a doubt in their minds, for finding the queen, relies not only on expertise and experience, but also a little luck. Queen location is certainly not an exact science, but there are one or two practices, which can be used to make it easier.

It should first of all be said that finding the queen on regular colony inspections is not usually necessary. As long as we can see the usual formation of eggs or young brood, we can be reasonably assured that the queen is present and doing her job. The problem arises when we want to perform the artificial swarm manipulation, or take a nucleus, and sometimes, in mid-summer, there are no eggs to be seen, and we can't be sure if the queen is missing or simply gone “off lay”. It is possible to take a nucleus of course, without finding the queen, (see “How to take a Nucleus”), and it is also possible to create an artificial swarm without necessarily locating the queen. This can be achieved by removing the supers, moving the brood chamber to one side, and replacing it with another brood chamber filled with frames containing drawn comb or foundation. All the bees are then shaken or brushed, frame-by-frame, into the new brood chamber, including any bees clinging to the walls of the old chamber. By doing this, we are ensuring that all the bees from the brood area, including the queen, are now in the new brood chamber. The hive can then be rebuilt in the following sequence: - Floor, New Brood Chamber containing bees, Queen Excluder, Old Brood Chamber containing brood with no bees, Supers, Crownboard and Roof. The young bees will quickly move up through the queen excluder to cover the brood. This brood chamber can then be taken away to a new position, fulfilling the Artificial Swarm criteria (see “How to create an Artificial Swarm”). This is best done in the evening, or the following day.

The mid-summer scenario can also be overcome without the necessity to locate the queen. When the absence of eggs or young brood puts the presence of the queen in doubt, it is obviously a matter of some concern to the beekeeper. It can mean that the queen has been lost, inadvertently crushed or dropped outside the hive during a previous inspection, or she has simply gone off lay due to a lack of stores being brought into the hive. If times are hard, a lot of new mouths to feed do not exactly help the situation, so the workers feed the queen less, and she stops laying eggs. It also has the effect of reducing her size, making her even more difficult to spot. There is however, a simple means of determining exactly what is going on. It is unusual for all colonies to behave in the same way, at the same time, and if a frame containing eggs can be taken from another hive, it can be used to answer the query. The bees should be shaken from the frame, back into their own hive, and then the frame placed in the centre of the brood chamber in question. At the next routine inspection we can determine whether there is a queen present or not, by the way in which the frame of eggs has been treated. If it has been treated as worker brood, then we can be fairly sure that the queen is in residence, but if the eggs have been used to produce queen cells, it would tend to point towards the absence of a queen.

It has to be said however, that all this shaking, brushing, and going back the next day is hugely disruptive to the bees, and time consuming to the beekeeper. It makes life so much easier if we can simply find the queen. So how do we increase the odds in our favour?

There are usually two reasons for failure: -

1. Failure to recognise the queen on the frame amongst all the other bees.
2. The queen is not on the combs at all, but on the walls or floor of the hive.

Firstly it should be determined that we are right in expecting to find a queen, i.e. are there eggs present, or is there a sealed queen cell, which might signify that the queen has left with a swarm. If we can be fairly sure that the queen should be there, then the hunt can begin. It is wise to use as little smoke as possible, for when thousands of bees are rushing around the combs, thinking their house is on fire, it does not help in the search. So what are we looking for? What features of the queen will stand out? The long spidery legs are often a give away, and of course, the long, pointed abdomen, which extends well beyond the folded wings, unlike the worker or drone. When searching, the frame should not be held too close to the face, as the queen will often be recognised as standing out from the crowd rather than from a close inspection of individuals. It is therefore better to hold the frame down in front of the body, and at a forty-five degree angle, so that you are looking across the frame rather than staring into it. The exercise is best carried out during the warmest part of the day, when a large volume of the flying bees will be away from the hive, foraging. This again, increases the odds in our favour.

But what about the mechanics of the search? On opening the brood chamber, the outer frame should be examined closely. If we are fairly sure that the queen is not on that frame, the bees can be shaken back into the brood chamber, (just to make sure), and the frame placed outside the hive leaning against the entrance. Exactly the same should be done to the second frame, again placing it outside. We now have a two-frame space within the brood chamber, which works for us in two ways. Firstly, it allows us to manipulate the remaining frames at an angle, before removing them, reducing the risk of crushing bees between the sidebars of the frame, and the wall of the brood chamber. Remember, the queen could be there. Secondly, after the next frame has been inspected, it can be placed against the inner wall of the brood chamber, and the two-frame space will reduce the likelihood of the queen nipping across to it from the frames we have yet to inspect. The frames should be inspected one by one, paying attention to not only the face of the combs, but also the side bars and bottom bars. Any small clusters of bees should be dispersed by gently touching them, to ensure that they are not concealing the queen. When withdrawing a frame from the brood chamber, it is always wise to look at the dark side of the frame first. This is the side, which was facing the next frame, and is where the queen might run to escape the light from the exposed face of the comb. If examination of each comb is a lengthy process, it is not unknown for the queen to keep moving away from the light, and she is not found until the last frame. If we get to the far side of the brood chamber without success however, the process is repeated as we go back through the frames. Having made this extensive search, if she still eludes us, then it can be assumed that she is hiding on the floor or walls of the hive, and not on the combs at all. If this is the case, the queen could be in a vulnerable position, where she is exposed to a real risk of being accidentally crushed. At this point, it is good practice to close the hive, and try another day. If it is imperative however, that she be found, the bees can be "strained" through a queen excluder. This can be achieved by placing the queen excluder over the supers, which have been removed, with an empty super or brood chamber on top of it. All the bees from the brood chamber can

then be shaken or brushed over the queen excluder, not forgetting those on the walls or the floor. The workers will pass through to the supers below, leaving only drones and the queen unable to get through. If the hive is without supers, the same result can be achieved by removing the brood chamber, and placing a queen excluder on the floor. An empty brood chamber is then placed on top of the queen excluder. A ramp is constructed at the entrance to the hive, similar to a swarm hiving ramp. The frames are then taken from the old brood chamber one by one, and the bees shaken or brushed onto the ramp, then returned into the new brood chamber. When all the frames have been treated in this way, the crownboard and roof are replaced, and the hive left alone for an hour. During this time, the bees will have re-entered the hive, and covered the brood. If the brood chamber is then removed, the queen should be found on the floor, or clinging to the underside of the excluder. Once again however, this is extremely disruptive to the bees, and should only be used as a last resort.

The most helpful aid to the problem of course, is a marked queen. This increases the odds on finding her by a considerable amount. Many beekeepers shy away from queen marking, because of the fear of damaging her. If it is handled correctly however, the risk is very small. A simple means is by the use of a press-in queen-marking cage, which ensures that she gets touched with nothing more harmful than the threads of the cage. The cage consists of a circle of wood, which supports a network of cross threads. On the underside of the circle are metal spikes, which are pressed into the comb, encaging the queen within. The cage is pressed in until the pressure of the cross threads is trapping the queen firmly against the surface of the comb. Some manoeuvring is required to position the thorax within a square formed by the cross threads, and it is then a simple operation to mark the thorax using a queen marking pen. There is an international queen marking colour system, which is used to denote the year in which the queen was produced, but the important thing is to use a colour which will make her stand out on a densely populated frame. Our principal aim here is to make the queen easy to find. In order to mark her of course, we have to find her initially, but for this procedure, we can choose the time of year. The first inspection in the spring is a good time for marking queens. Having just come through the winter, numbers are at an all time low, and the queen is usually much easier to see in these circumstances. It is always a good idea to have the queen marking equipment near to hand throughout the season however, for those occasions when you spot the queen, and you are not even looking for her.