

"I write down everything I want to remember. That way, instead of spending a lot of time trying to remember what it is I wrote down, I spend the time looking for the paper I wrote it down on."

— Beryl Pfizer

I've got four vehicles at my place: a 1951 John Deere Model M tractor, a minivan, a pick-up truck and a convertible. The planets must have aligned because in the past 12 months, every single one of them has needed to have the battery replaced. I've only had the minivan for about five years and I didn't recognize the brand of battery that was in it so I knew I hadn't replaced it myself. Hoping there was some life left on the warranty, I called my mechanic and asked if his records showed whether he had replaced it for me in the recent past. He looked it up and said, "No, I haven't replaced the battery in that one... what does the date on the sticker say?" Doh! I had forgotten that batteries come with a sticker with the date they're manufactured. This particular battery had been made in 2013, two years before I bought the van, and so had lived a long and admirable life.

Wouldn't it be great if honey bee queens came with a sticker? Doh! They do! Beekeepers get to choose between "marked" versus "unmarked" queens. Queens are marked by applying a dot of non-toxic paint to their scutum, the shiny plate on top of their thorax. For many people, the decision whether to have marked versus unmarked queens goes like this:

Customer: "How much are your queens?"

Clerk: "\$32 unmarked and \$37 for marked."

Customer: "What's the difference?"

Clerk: "\$5."

Customer: "Hmm." (Checks change in pocket.) "I guess I'll get a {random answer} one."

Other than \$5, what is the difference between owning marked versus unmarked queens? In other words, why mark queens? There are at least three very good reasons to mark queens and a fourth that is a bonus.



This pretty queen is a welcome sight. But how old is she? Is she the result of a swarm? Is she likely to be replaced soon? Without any mark, her life story is a mystery.

Has the colony swarmed?

How many times have you heard someone say, "I think my colony has swarmed!" They may say this because there isn't any brood at the moment or the population may have suddenly decreased. (See April 2019's [Swarm Season is Here](#).) But what if a month or two has passed? How can we tell if the colony has actually swarmed or not in its history?

The answer is easy: if the queen is present and marked, the colony has not swarmed or otherwise superseded her. If the queen isn't marked, then we must continue to ask questions. But the presence of a marked queen, YOUR marked queen, is a critically important bit of diagnostic information.

How old is the queen?

Along the same lines, one of my queen-raising goals is to have non-swarmy colonies. Frequent swarming is a genetic trait and it can be selected for or against. Since springtime swarming is extremely detrimental to honey production, my goal is to have colonies that tend to keep their queens for more than a year. One of my favorite colonies kept its original queen for about three and a half years and gave me nice honey crops. That's what I want.

So if I intend to make splits to increase the number of my production colonies, which colonies should I choose to propagate?

Obviously I want daughter-colonies of my long-reigning queens, since they are most likely to be long-reigning as well. Which ones are they?

The international color scheme for marking honey bee queens makes this determination obvious. As the chart below indicates, each year is assigned a color that should be used to mark new queens that emerge during that year. The color wheel repeats after five years. It is not biologically impossible but it is essentially unheard of for production queens to last as long as five years, so the risk of ambiguity (e.g. a Year One queen being mistaken for a Year Six queen) is practically non-existent.

The color scheme is easy to remember using the mnemonic, “**Will You Raise Good Bees?**” where the first letters of each word stand for **W**hite, **Y**ellow, **R**ed, **G**reen and **B**lue. The color scheme starts with years ending in “1” and repeats when we reach year “6”. So new 2019 queens should be marked with green paint; last year’s queens should have been marked red.

Year	Color	Mnemonic	
20x1, 20x6	WHITE	<u>W</u> ill	
20x2, 20x7	YELLOW	<u>Y</u> ou	
20x3, 20x8	RED	<u>R</u> aise	
20x4, 20x9	GREEN	<u>G</u> ood	
20x5, 20x0	BLUE	<u>B</u> ees?	

Is this the same sweet queen that I know and love?

A cornerstone of the 2016 [North Carolina Africanized Honey Bee Action Plan](#) is to know what race of honey bee is in our hives! African/Africanized honey bees are notorious for usurping (taking over) established colonies of other races. One day our bees are sweet little angels and the next they are the spawn of Satan under new management. If our queens aren’t marked, how will we know for certain that a usurpation event hasn’t occurred? Let’s not kid ourselves – we won’t know, unless we find out by either us, our family or our pets being viciously attacked.

Even without Africanization, normal supersedure can change the temperament,

productivity and other characteristics of a colony. Unlike swarming, supersedure can occur seamlessly and without anyone ever knowing. Only by keeping marked queens will we ever know that queen replacement has occurred.

Where’s Waldo?

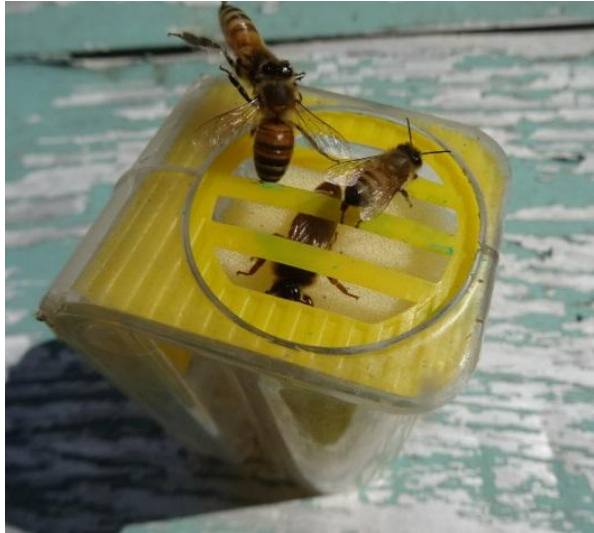
As pointed out in June 2017’s “[Where’s Waldo? A Dozen Tips for Finding the Queen](#)”, we don’t need a paint dot in order to find our queens. Every beekeeper should develop their observation skills so that they can spot unmarked queens. Most of the time people just don’t know what to look for, as explained in the article. But to be perfectly honest... a bright paint dot doesn’t hurt!

Mark your own

When I was a beginner beekeeper, I was wisely told, “Marking queens can be helpful, but it is easy to do a lot more harm than good.” This point was driven home at a NCSBA conference workshop given by State Apiary Inspector Adolphus Leonard. He expertly demonstrated how to pluck a queen from a frame by sweeping up her wings from both sides of her body (very important) while not crushing her thorax (also very important). Then, while resting her on your index finger, hold her head-first between your thumb and forefinger while only applying pressure to her thorax, never her sensitive abdomen (extremely important). Oh, and make sure that you keep her still by holding on to at least two of her legs; if you only hold one, she’ll run in circles and her leg will pop off. Needless to say, the experts all advised, “Practice on drones first!”

Thankfully there are a wide variety of devices that make queen-marking less dangerous to Her Highness than the full-bore hands-on approach. Wyatt Mangum¹ has even described a nifty no-touch method that uses a bottle cap with a hole drilled in it: lay the cap directly onto the queen as she scampers on the

¹ Wyatt A Mangum, “How to Mark Queen Bees with No Runs, Drips, or Errors,” *American Bee Journal*, August 1, 2016



A one-handed marking tube has a sliding catch-screen that traps the queen while allowing workers to escape. A foam-topped piston holds the queen steady for the marking procedure.

comb, position the hole over her thorax, apply a tiny dab of paint and voilà, mission accomplished!

For years I used a “clam shell” queen catcher along with a push-up marking tube to mark all of my queens. Those have been relegated to the closet ever since I bought a “one-handed marking tool”. This device is extremely simple to use. The queen is never held or even touched so there is no risk of applying too much pressure or having her legs pop off. The “catch” mechanism is built into the marking tube so the queen isn’t transferred from one to the other, eliminating the chance for her to escape.

To operate, slide the flexible plastic catch-screen into the open position. Move the marking tube’s piston into the fully up position, creating a large chamber. Find the queen on a frame. Place the open tube over the top of the queen. Slide the catch-screen into the closed position. Now the queen and some worker bees will be secured inside the tube. Slats in the catch-screen are queen-excluder sized so the workers will soon exit, leaving the queen behind, although a few workers don’t hamper the process of marking the queen.

Prepare your marking pen or brush by



Test the marker on a disposable surface to ensure the paint doesn't come out in a large queen-killing blob.



With the queen gently pinned in place, apply a dot.

making a test mark on a piece of paper, leaf or any handy surface. The first dot often comes out as a big blob. It would be a very bad thing to coat the queen’s entire thorax with paint (for example, it could clog her breathing spiracles that run along the side). So we must prime the pen or brush before using it to ensure that the dot has an appropriate amount of paint.

Push the marking tube’s foam-tipped piston toward the catch-screen. When the queen is positioned correctly, push up to bind her underneath the plastic slats. Pushing gently on the slats themselves will also hold the queen in place. Note that the tube has a built in stop-point that prevents you from squishing the queen through the slats – a very nice feature!

With the queen held in place, apply a dot of paint to her scutum. Then slide the piston back



Open the catch-screen to allow the queen to exit and crawl down between brood frames.

down the tube so the queen can move freely while the paint dries. After a minute or so, place the marking tube over brood frames and slide the catch screen into the open position. The queen will then walk out of the tube and go down between the frames.

That's it! Your queen is now identified with respect to her provenance and age. Add a note to your records to say which queen was marked, when she was marked and what the color was.

Note that you can get creative by marking with different shades or even more than one color or shade, where each shade or combination is meaningful. For example, a small lime green dot on a forest green base could mean a 2019 queen from your favorite supplier while a small aquamarine dot on a forest green base could be a 2019 queen from a swarm.

Which paint?

There are a lot of different paints that

beekeepers use to mark queens. Look for something that is non-toxic, acrylic and fast-drying. Fingernail polish works fine and is available in a dizzying array of colors. Testors model airplane paint is a classic for queen marking; for it, I use a slender blade of grass as a gentle, disposable brush that applies just the right amount. But without any doubt I prefer to use a paint pen. We can easily find them in the five colors we need and, unlike classic model airplane paint, a dot can be quickly and easily applied using only one hand. Paint pens are readily available at the bee store and in the craft section of WalMart.

On your mark... get set...

Why mark queens? Simply put, it is better to know things than not know things. The better question is, why wouldn't a beekeeper mark their queens? The risk of harm has been largely eliminated with new gadgets (although the advice to practice on drones is still appropriate), so I struggle to understand why marking isn't universal. If it is a good idea to put a sticker on car batteries, surely it is a good idea to mark queen bees! Give it a try and see if you agree.

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