

# What We Do to Successfully Overwinter in SW Michigan

By Charlotte Hubbard

FB: "Charlotte Hubbard, Beekeeper and ..."; Insty: Qbeeme; [www.hubbardhive.com](http://www.hubbardhive.com)

## Introduction / Caveat

We're getting lots of questions about how we overwinter, so I documented our *current* approach. We're always learning. This is what we're doing going into winter of 2018. It tweaks a bit what we did last year, where we had 28 / 30 survive (and most of which came through STRONG), and is reflective of what we've done the last few years, when our overwintering success consistently exceeded reported regional averages.

Please note--following our approach doesn't guarantee success, but it will hopefully help! And yes, we pamper our bees. Commercial beekeepers probably would roll in laughter about our approach (if they had time to read this). What we do is definitely in the "backyard beekeeper" vein.

## Two "Secrets"

1. The thing we've found that matters most? **Healthy bees--generally accomplished if Varroa mites are under threshold.** Late summer / early fall bees are making the bees that (hopefully) will survive the winter; they need to be in prime health. Unfortunately, these early fall bees are often severely challenged--by monoculture, weather, mounting Varroa and small hive beetle counts, and a declining workforce as Queenie slows down. We've found if the colony has been healthy all season long, options such as screened bottom boards versus solid, wrapping the hive or not, painting it purple with yellow spots, etc. -- those elements are not critical.
2. Key advice for newbees? Don't take advice from folks who haven't successfully overwintered multiple hives over multiple years, in your geographic region. And the purple with yellow spots? Yep, I read on Facebook that that was the secret to overwintering.

## What a Colony Needs to Overwinter

1. To be healthy (well in advance of winter) in order to raise enough bees to survive winter, and forage for the nectar to 100 pounds of honey
2. 100 pounds of honey
3. Ventilation
4. Moisture abatement
5. Protection
6. A bit of luck

I'll discuss these in detail next, along with suggested time of year for achieving them.

## Overwintering Prep: August – early September

August through the middle of September is a time for inspecting for any issues, and then remediating them as you ensure the colony is strong and healthy enough to get through winter. A strong, healthy colony can survive almost anything Michigan wants to throw at them, including extreme cold.

To promote bee health:

- 1. Get Varroa under control**—following recognized methods for monitoring, and treating if need be. Our bible for this is the free Honeybee Health Coalition’s Guide to Varroa Management, downloadable from their fabulous site: <https://honeybeehealthcoalition.org/varroa/>. They provide reliable, well-researched information on how to naturally strive to keep mite counts down, how to monitor to see where you’re at relative to SEASONAL thresholds, and the appropriate treatments based on the time of year.

Varroa control is a season-long battle (er, commitment), and August / September is when Varroa often gain the upper hand. (That publication explains why.) Having your 2018 colony thriving next spring requires Varroa under control well before winter.

- 2. Minimize robbing:** your hive, especially if it isn’t strong, is under attack. Did you notice bees are often a bit more defensive late summer? Part of that is because most other stinging insects perish come frosts, so a kamikaze mission to get sweet-smelling honey seems reasonable to an insect brain. Other honey bee colonies know it is “survival of the fittest,” so stealing--more efficient than searching for often limited forage—may occur.

Minimize robbing by installing robbing screens—we put ours on the first of August and they stay on until spring. There are many easy-to-make (or purchase) options on the internet. Just remember to put them on late night or early morning, as the colony’s inhabitants will need to be home so they can reorient to the new doorway location in the morning.

We also close up the top entrances—yep, the same holes we drilled in to the hive body in June so they could more easily access the top supers where they’re storing honey, the same holes that help with hive ventilation and thus, honey curing. We close them up with things like ever-so-attractive duct tape, one of the plastic gloves we’ve gone through, a wine cork, etc. We do this because it is one less doorway they have to guard this time of year when threats abound, and I’d rather those bees do other things like gather nectar or raise babies than guard. However, we do leave an upper entrance on strong colonies working three or more boxes.

- 3. Verify the bees have what they need.** And what does every colony need? As always, to be queenright—meaning there’s a queen laying predominantly worker bees. (You don’t have to find the queen, but you need to find evidence she’s in there via a single egg per cell (meaning you’ve had a queen within the last days, or larva (queen within nine). Beyond that year-round requirement, the bees need:



*Here's a favorite photo of our girls from the second week of September 2017. Not sure what the pollen source was, but I salute their salute to the maize 'n' blue.*

**Pollen:** we're blessed here in SW Michigan with some wonderful late summer pollen sources, like goldenrod.

If you're not in an area or a season where there's pollen available and coming in, and / or your colony is struggling, you may want to supplement with a pollen patty this time of year, with two caveats:

1. Feed internally (like set the feed container on the inner cover, and then have an empty hive body around it and top cover over it) so it isn't an invitation to robbers and
2. Feed in small chunks and check that it is being consumed by just bees, because small hive beetles also love pollen patties.

**Nectar:** This year, we've had (over?) abundant rain in SW Michigan, so nectar generally isn't an issue. However, for colonies that don't have the workforce to gather it or appear they may be light going into winter (in my non-bee estimation), feed sugar syrup. Again, two caveats:

1. Feed internally (like set a jar on the inner cover, and then have an empty box / top cover over it, or use an internal feeder so it isn't an invitation to robbers) and
2. 2:1 sugar syrup this time of year—laced with helpful honeybee vitamins and / or honey, if that's your preference

**Water:** If "they're flying, they're dying" – using precious energy and fragile wings for necessities you can more easily provide. Consider near or in-hive water source if they don't have water handy (especially if you're trying to keep them from learning the location of your neighbor's pool. Supplying water applies all season long, but especially during the very challenging late summer / fall time of year, which is often dry.

**The right space:** As the queen slows down producing more bees demands on the workforce increase. September is likely the time to remove the untouched honey supers—why make them patrol and guard those? Of course, if it is a power colony surrounded by still-blooming goldenrod and asters, maybe give them the chance to fill things up and leave it until October? Unfortunately, it is experience and gut feel to try and balance their diminishing need for room versus not having enough room to store fall pollen and nectar. As a beekeeper, you'll learn to notice and react to seasonal factors like weather and how it impacts forage, and the timing of nectar and pollen plants in your area.

**How much honey does a colony need for the winter?**

One-hundred pounds for this area—somewhat ambitious for a first-year colony.

A full, capped deep frame weighs about eight pounds; a medium—about six. If you have a colony with more than that by early fall, you may want to share the wealth with other colonies, or put some frames in the freezer and add them back later if needed. (We pulled what we thought was excess honey last August, and ended up putting it back on hives when it was 70 degrees in early December and they were devouring their stores.)

Understanding bee-havior late summer / early fall is helpful. A colony strives to put on a honey ceiling for winter. Come August, they'll start "backfilling the brood nest" – meaning the queen won't lay as much, as when a new bee emerges, the cell will be filled with nectar instead. This starts at the top of the colony, which over time moves the brood nest toward the bottom. Bees rarely work above that honey ceiling once it is well underway, so it is likely time to remove any upper, untouched boxes if they're above filled frames of honey.

**4. Actually keep them.** The final key step to successful beekeeping is to actually manage the colony. While you can learn a great deal by looking at the colony from the outside getting into it 1-2 times / month is also important. Looking for things like: Are there signs of disease? A wax moth infestation? Queenright? Mold? Ant infestation? Honeybound? Is there little brood because she's a poor queen or because she stopped laying because of a drought, or is it because she's laying conservatively to not overload a small workforce, or perhaps there's insufficient pollen to feed more nurse bees so that's part of the problem? Too many small hive beetles? By September, you're almost out of time to try and remediate any problems, so you need to discover them as they develop. Trying to fix things by September doesn't give you much time or many options.

### **Mid-ish September—Time for Best Guesses**

About the middle of September, it is time to assess what colonies are well on track to be in shape for winter, and do something more drastic with any that are not. Sorry, I say "about" because ... it all depends. If the weather has allowed for a mid-September flow and the colonies on the "carefully watch" list are making great progress, I'll delay the tough decision of whether I think they can make it or not until further into the month.

And, whatever you do, it is your best guess. Make notes on what you're doing and why so you can learn from it next season. Experience will help you improve those guesses, but major impacts like climate change (aka a week of 70-degree temperatures in December!) mock even the most experienced beekeepers.

Mid-ish September, we look at each colony and ask if they're likely to survive the winter—meaning are they healthy, with enough bees to generate warmth, and sufficient stores? Before I answer what we do with them a few definitions are in order:

- "Healthy" – no signs of disease, and the current mite count under the recommended threshold. (The count you did August 8 doesn't apply a month later.)
- "Enough bees?" -- minimally, our experience is that a colony with a young queen and a few frames of brood with a great laying pattern, and at least that amount in stores can be pampered through the winter. (Well, most winters, with some luck.) We'd prefer something a much larger though. You can get small colonies through the winter; we were inspired by Dr. Meghan Milbrath's paper, 'Sustainable Beekeeping Using Late Season Nucs', available at [sandhillbees.com](http://sandhillbees.com), under the 'education' tab. Thanks Dr. Milbrath. It works.
- "Sufficient stores" -- at least 100 pounds of honey. For a small colony described in the previous paragraph, about half that is probably sufficient. We like to err on the side of caution and provide more than enough honey (and an emergency food ceiling, described later.)

So, it's mid-September, time to best guess if a colony will likely survive the winter.

*If yes, we think so, we'll then determine:*

Are they in the appropriately sized home? For those that are not, move them to smaller equipment so there's less room to heat and patrol, if that's an option. We've moved strong, small colonies out of 8-frame equipment into two-deep, 5-frame nucs or a Michael Palmer-type configuration, for example, and even successfully took a couple single, 8-frame-deep-with-a-honey-super colonies through winter with a bit of pampering (explained later.)

If you can't move them to a smaller home, time to get more equipment! 😊 Or, reduce the colony as small as possible, and perhaps pamper them a bit more.

*No, they're just too small to make it, but they are healthy:*

If their small size is NOT because of a health issue, combine them with a strong colony ... so that the merged colonies have time (and weather) to rearrange the brood and stores appropriately. I hate combining, because it means killing a queen. But, better to increase a larger colony's chance of success with a boost of bees from a colony that would likely die anyway. Which queen to kill? Aaaargh. Probably the oldest one? The one not named after your Mom?

There's plenty of info on the internet on how to combine colonies, but here's a couple hints based on my experience:

- Make sure you see the queen in the strong colony before you kill the one in the weaker colony (yep, made that mistake—never assume anything in the bee yard) and
- Use classified ads or sports instead of the editorial section in the newspaper combine. In this political climate, those seem easier for them to digest as they chew their way to unification. 😊

*They're too small to make it, and they're struggling:*

If you don't know why your struggling small colony didn't improve while you carefully managed them through August, you don't want to endanger the health of a larger colony by combining the two of them. You're perhaps better off continuing to try and optimize their health (use another but different mite treatment if needed, and continue feeding heavily?) and substantially pampering them.



## Mid-ish September through Mid-ish October

It's Michigan. We don't know when winter is coming, but we know it is. So, break down activities into internal and external to-dos. Do the internal while you can safely open the colony weather-wise; do the external any time before winter—be that October or February. ☺



*You don't want to find a family of mice stung to death come spring. (That dirty white stuff is residual sugar.)*

### **Internal To-Do List**

1. Perhaps **one last check of Varroa levels?** Because if needed, oxalic acid vaporization or dribble are highly effective in times of minimal brood.
2. **Remove the queen separator**, if it isn't already done.
3. **Install a critter guard!** If you have on a robbing screen or entrance reducer, you'll still need to further discourage critters (hardware cloth, or nails over the opening). Once it is cold enough for bees to stay mainly clustered, critters like to move into warm, dry, full-of-honey homes where there's no threat of stinging until spring.

4. **Relocate the colony if need ... bee.** We dislike moving them after it freezes because the wax is brittle and we'd be disturbing a well-crafted cluster. Reasons to relocate include:
  - Can you access the colony throughout winter to check on it?
  - How about come (muddy, rainy?) spring? Is it too close to a possibly flooding river?
  - Would it be advantageous to snuggle it against another colony so they can share warmth?
  - To take advantage of the natural windbreak on the other side of the field
  - Because that large dead tree branch is now visible with leaves thinning, and it might crash down during the winter.



*We moved the nuc two feet closer to a big hive. This photo is pre-winter wrapping (thanks Mother Nature for the snow surprise!)*

### *Probably later in October ...*

These last two are what we do when we suspect we're putting the bees "to bed" for the winter (because the thermometer is about to prohibit us opening a colony.)

5. **Put on an emergency food ceiling.** The ceiling is needed because bees (typically) move down to the bottom in the fall, and will eat / move their way up to the top of the hive by spring. If they're short on stores (perhaps because we have an unseasonable warm winter and they consume them faster than expected?), you want them to have something to consume if they hit the top—use a candy board, or the Mountain Camp Method (google for more information), etc. Even if you think they have ample stores, three to five pounds of sugar is cheap insurance.

You need to wait until later fall to add the ceiling, because sometimes bees see it (especially if it is the loose white sugar of the Mountain Camp Method) as a foreign substance and take it out, weather permitting. Come February, when honey stores are waning, they'll view it differently.



*Proof that bees love the Mountain Camp Method; photo from a warm day in February when we peeked to see if they needed more sugar. We cut a hole in the newspaper in the middle in case that's where the cluster is when it nears the top.*

6. **Address moisture**, which inherently occurs when a cluster of bees shivers to keep warmth, generating moist heat. That heat rises (and softens honey for them to eat). If warm, moist air hits a cold top cover, it'll condense and drip back onto the bees.

We address moisture with a combination of a 1/2" hole in the non-prevailing wind side of the hive, about 2/3rds of the way up (so they can get out when there's lots of snow), and a moisture quilt box ... of which there are lots of styles. The appendix shows the style Hubby developed.

### ***External To-Do List***

1. **Block the wind**—straw bales work, and where we don't have to worry about what the neighbors think, so does a stack of broken pallets or lawn chairs on their sides. (So do junk cars.)
2. **Put in the slider board if you don't have a solid bottom board.** Or don't; hubby and I argue about this every year. If the Styrofoam (next step) extends to the ground it'll keep wind from gusting up underneath and into the colony, so I don't think it is needed. But, I usually let him win this argument, so most of our colonies have the slider board in, starting about November. It seems more tree-like, and that's what we're striving to do.
3. **Add Styrofoam, on 3-4 sides.** Our big, standalone colonies get Styrofoam on just the prevailing wind sides; the colonies we're pampering (not as strong, or special queens we adore) also get it



on all around. It is typically extended to the ground, or at least lower than the bottom box. That “sleeve” of Styrofoam also provides more stability against wind gusts.



Did I mention we pamper our bees? There are two entrances for the colony pictured on the left, one on the bottom (buried in the snow!), and one about two-thirds of the way up ... but both behind that about four-inch vertical Styrofoam channel which eliminates their direct exposure to weather. We just added this channel concept last year. Overkill perhaps. We had great survival rates pre-channel, but we’re always trying to make it better for them. It was joyous to see bees flying out the top of the channel when we had a weather break in January. I also love seeing that big pile of snow on the top—proof that the quilt box insulates the warm hive from the cold exterior.

We wrapped about half the colonies also in “house” wrap, thinking that would keep the sun from degrading the Styrofoam. The Styrofoam without wrapping seemed to hold up fine, so we’re dropping that additional hassle this year.

**4. Hold ‘em down.** We had three hives blow over across the years (with bricks atop them!) we’re probably overkill on this now also. We use concrete blocks on the top, and in that particularly gusty meadow apiary, they’re also all strapped to the old truck bed they live on. Standalone nucs get strapped down no matter where they are. We worry enough about our bees without worrying about them blowing over.

### And that bit of luck?

The final component needed for successful overwintering in our opinion is a **bit of luck**. I’ve always appreciated the saying “luck is where preparation and opportunity meet.” If you’ve covered the first five principles, hopefully “a bit of luck” occurs for you also.

You can enhance luck by continuing your education. There’s plenty of information about beekeeping out there, and while you’re missing your little darlings over winter, work to become a better beekeeper by continuing to learn. BUT – a huge warning (again) for what you find on the internet: please only take advice from beekeepers who have been successful with multiple hives over multiple years, in your geographic region, and are keeping bees with legal practices.



*The Styrofoam does not extend much onto the quilt box, because we peek under the box hopefully come a balmy January day to see if they need more sugar, and in February to add a pollen patty. Those white “bumps” in the photo are lumps of sugar (Mountain Camp Method.) It bumped up oddly like that – probably because it absorbed moisture also.*

*Hubby mechanically fastened the Styrofoam, but when it got cold unexpectedly, the last dozen colonies were bungee corded.*



And despite all the preparation, some luck is involved. It is SW Michigan, where sometimes winter seemingly ends in February, and sometimes (like this year), winter didn't really end until May, and then we jumped right into summer.

## Appendix

We've had great success with a **quilt box style** hubby designed (modified from others he's seen, so thanks to lots of folks for the inspiration.)

We purchased unassembled hive bodies, and cut down the top edges of the long sides ½ inch. We paint them battleship grey, so we can quickly identify quilt boxes in our inventory, and at a glance know which colonies have them installed.

The side cut-down allows some air to move ABOVE the chips, helping to promote keeping them dry as they absorb the colony's moisture. The colony's telescoping top cover ensures rain / snow doesn't blow onto the chips.

We then install a screen about two inches above the bottom, across the box. This provides room for the sugar ceiling.

Above the screen gets a couple inches of absorbent material (aka gerbil bedding--a few flakes are shown in the photo.)

To use:

1. Add the absorbent materials to the box.
2. Open the colony, add the emergency food ceiling.
3. Put on the quilt box.
4. Add the top cover (and bricks / rocks / whatever for wind protection.) We remove inner covers for the season.

