

Management for the Long Langstroth Hive

First I want to provide some background information for how I settled on this design and then the process we used to work out the “kinks” in our management system. Like most beekeepers, I had only worked with vertical Langstroth hives. I was in charge of our local bee club’s club apiary and also answered questions which came into our bee club’s website. I held field days at the apiary once a month throughout the beekeeping season to teach beekeeping skills and to experiment with different beekeeping methods and equipment. Over time, more and more people were asking about top bar hives. Since I hadn’t ever kept one, I thought it might be a good idea to put one in the club apiary so I could learn how to manage it and then I could help top bar beekeepers. I started researching in the off-season. I quickly uncovered some major flaws in most top bar hives, which accounted for the problems most people were having with keeping them:

1. The first flaw most of the top bar hives had was inadequate space. Most were designed too small, so beekeepers were having trouble with swarming.
2. The second problem was ventilation. Many of the beekeepers had problems with way too much moisture in the hive, which often led to winter mortality because the bees got wet and chilled.
3. The third problem was comb attachment to the sides. Some beekeepers reported needing to use a specially designed tool to break the comb every time they inspected the hives.
4. The fourth problem was the inability to inspect without a lot of disruption because the top bars are the top bars, there is no inner cover to take off and peer inside to see what is going on. This makes it so the beekeeper has to remove one or more bars to even see inside the hive.
5. Fifth, top bar combs cannot be extracted,
6. and lastly, you cannot interchange frames/combs from traditional hives to top bars – or even to other top bars if they don’t have the exact same dimensions.

Through my research I discovered that many Europeans and also some beekeepers on this side of the pond use horizontal hives with frames. Some of the European designs use other dimensions than the traditional Langstroth, but many do use our dimensions. I got enough ideas to ask a beekeeper friend who is also a woodworker to build me a horizontal Langstroth. I called a meeting of beekeepers interested in top bar beekeeping in March of 2013. When they arrived at my house, I had the horizontal Langstroth in the middle of my living room floor. Since I am the housekeeper, I can do this! I decided to try foundationless frames, which use natural comb. Most beekeepers interested in top bar hives liked the natural comb idea, which was the main reason for trying that hive design. I also discovered that historically more cultures around the world used some form of horizontal hives than vertical designs. After introducing the hive and explaining its virtues and listening to several people who had kept bees in top bars relate their difficulties, we unanimously decided to try out the horizontal Langstroth in our club apiary that spring.

Fast forward to now (2018), we have had five seasons to tweak our design and figure out how the management differs from the vertical hive. The biggest difference is that the beekeeper can relax and not do so much in the hive! We learned this the hard way. Doing normal inspections, removing frames and passing them around a group of people apparently left our first hive queenless! There are a lot of things the beekeeper doesn’t even need to worry about with a horizontal design. For instance, the bees NEVER put any brood at all in the honey combs. There is no need for a queen excluder. They just don’t do it. They always put all the brood in the frames in the front (closest to the entrance). They always put the honey behind that. I will detail how to manage this by starting with spring installation of bees and going through the season.

Through the beekeeping year in a Horizontal Langstroth Hive

Let's assume we are starting with a new hive in the spring. Our first hive was populated with a package. We ran into two problems immediately: How to introduce the queen with only one row of frames and no headspace, and how to feed sugar water. You can hang a queen cage between frames if necessary. We took a chance and direct released the queen because we decided they had all been together long enough that the bees had accepted her anyway. It worked. The first time we did this, it was cold and too early for forage. We had a lid that was not hinged. We put a 2/3 board on the back, put a regular deep box over the front third, put a sugar water feeder in and put a regular top cover on that. It looked really strange, but it worked. The next time we did it, we installed after the dandelions were blooming and did not feed, and it worked fine. I have put a chicken waterer in the back third of the hive with pine needles floating in it filled with sugar water. It isn't ideal, but it works. You can also use a division board feeder put in with the frames. It acts as a division board, as its name implies, so put it at the very back behind the honey frames. We have also installed a regular nucleus hive (nuc). By timing it so the flowers were in bloom, we did not need to feed. Both methods worked fine.

The first year we used two deep frames of drawn comb as the first two combs, then put 30 empty foundationless frames in behind those. We didn't pay very much attention to leveling the hive. The bees did build nice comb, straight and in the frames, attached on all sides. As the combs went back in the hive, they began to bow out a little bit. It was still workable. We were able to manipulate frames and look at them. We learned that the combs are soft and fragile without foundation under them, you need to pull them out straight and don't tip them sideways. If they have honey or brood in them, the weight will tear the comb out of the frame, especially if it is warm out. I learned that hive inspections can be much less intrusive than in a vertical hive. You open the top cover. Then instantly you can tell how far back the bees have worked the comb by looking at the inner cover holes. If they have moved into the middle third of the hive, you will see bees through the inner cover hole in the middle, if they are all the way to the back third, you will see bees in all three holes. Otherwise, you will only see bees in the front inner cover hole.

After opening the top and determining by looking at the activity in the inner cover holes how far back the bees have moved, remove the inner cover in the back. Then if there is no activity there, remove the middle one. Look through the self-spacing frames and figure out the furthest back frame with bees/comb building activity on it. Remove one or two empty frames from behind that frame. You can now just look and see the whole frame without moving it at all. If you want to explore further, slide it over and look at its other side. You can do this for several frames. If you are in the front third, which will be the brood nest, you can look for your queen by just sliding frames carefully to the side and observing without taking them out at all. Be sure to move them very gently back into place when you have finished your inspection to prevent injuring your queen. It is MUCH easier to find a queen in this hive. She will always be in the front third, never further back. You only have ten frames to look at to find her, and she can't move to another box because there isn't one.

After several seasons we determined that 10 full frames of honey are more than adequate for overwintering in Michigan. So, in a good season, the bees will fill the front third of the hive with brood, the middle third with honey, which you will leave for them, then whatever they make in the back third is yours to take. Remember these are deep frames, so they hold over five pounds of honey each, sometimes more. It is very easy to remove honey frames from the back of the hive. You can leave the brood nest covered with its inner cover and remove frames from the back, and the bees hardly know you are there. We have extracted full deep frames of honey in foundationless frames. We used a hand-cranked extractor and spun it slowly at first, then sped it up, then slowed it down before stopping. Even if the combs

cracked a little, we put them back in the hive and the bees repaired them. After they age a little they get stronger because the bees put a coating of propolis on the combs. Always put empty honey combs back in the back of the hive for the bees to refill.

In the fall, we flip the inner covers over so the bees can enter straight into the hive without using the inner cover. Then we put blankets on top of the inner covers to absorb moisture and to insulate. We close the ventilation holes on the ends of the roof. We then wrap the hive with Reflectix bubble wrap insulation and a layer of tar paper over that, both stapled on. We reduce the entrance and/or staple ½" hardware cloth over it to keep mice out. Ideally we have managed our honey well and have left enough on for the bees. If not, it is possible to use a chicken waterer for a sugar water feeder in the back of the hive, or a division board feeder. In my experience, if the bees didn't make enough honey for winter, they usually won't survive regardless, but it doesn't hurt to try.

When spring arrives, assess the hive's health from the outside by watching for activity. Do not open the top cover until the daffodils bloom. Remember everything is on one level in this hive, so the cluster will be right at the top, just further back from the entrance. There is no buffer from the elements. When it is safe, open the hive. If it is alive, you will probably find them at work up in the brood nest, with the queen already rearing a second or third round of brood. There may or may not be drones or drone brood in the hive at that point yet. If the queen has not positioned the brood up by the entrance and there are several empty frames up front, gently move the empty frames out and move the brood nest forward. Add empty frames, not drawn frames to the back of the brood nest. Don't add drawn honey comb to the brood nest because in foundationless frames with natural comb, it will be all large cell size for honey storage, which in the brood nest will turn into just drone comb. If the brood nest is crowded and there are a lot of frames of brood, and you would like to make a split or nuc off of this hive, you may remove frames at this point. Be sure to not take the queen when you do that! Don't take more than two or three frames unless it is really really strong. These hives rarely, if ever, swarm because the bees never feel crowded. Because of that, you are taking brood frames for increase, not to relieve congestion. The good news about that is if you get waylaid and can't get out to the hives in a timely fashion in the spring, they will just do their own thing and won't swarm. When you get around to it, they will be doing just fine and you may even have some honey already.

I never use division boards because if I did, I would have to worry about how far back they were and if I need to move them. I fill the entire hive with empty foundationless frames, make sure my hive is level in all directions, install my bees and walk away. If I go on vacation or get too busy in June, I don't have to worry about adding supers, they have all the room they need. They can make all the honey they want, and they won't feel crowded and swarm. Many times in the summer I will skip looking into the horizontal hives when I inspect the vertical hives, because I don't have time, and I know they will be OK. I mostly want to see if they still have a queen and if they are making honey. I rarely if ever smoke these hives. It could be the bees, I try to keep Carniolians, or it could be the design, which requires less disruption to the bees when I get into the hives.