

*“An average human looks without seeing, listens without hearing, touches without feeling, eats without tasting, moves without physical awareness, inhales without awareness of odor or fragrance, and talks without thinking.”*

– Leonardo da Vinci

Beekeeping during winter can seem a little bit like owning Schrödinger's cat. The box is closed up and we don't know whether the cat (or our bee colony) is alive or dead. We can open the box and look, but that could potentially ruin the experiment.

However with honey bees we can cheat. There are several clever ways we can assess the health status of our colonies during winter without conducting the full-on invasive inspections that we do in nicer weather.

H. Storch wrote an expansive book on this topic, [At the Hive Entrance](#), which is available for free download as well as traditional hard-copy. Note that it is very Euro-centric so many of its observations and conclusions must be adjusted to fit a North American perspective. However the basic truth is universal: a great deal can be learned about what is going on inside a hive by watching the comings and goings at the entrance.

With that in mind, what follows are a few tips for inspecting hives in winter without the need for invasive manipulations.

### What's going on at the entrance?

Take a minute or two to observe the hive entrance. Are a few honey bees coming and going? If the temperature is at least in the upper 40s/lower 50s, you may see a few bees making “cleansing flights” (flying out to poop). If the temperature is warmer, in the low to mid 50s, it is warm enough to forage. On days this warm, by mid January we should see bees returning to the hive with packed pollen baskets. Maple trees bloom in January/February in Piedmont, NC; their pollen is a khaki/putty color. Honey bees turn pollen into brood, so lots of incoming pollen suggests that brood rearing has resumed in earnest.



We can tell a lot about the status of a colony in any type of weather simply by looking at what is going on at the hive's entrance.

If it is too cold for cleansing or foraging flights, are there dead bees on the front porch? Honey bees die all the time and undertaker bees will remove them. In warm weather the corpses will be taken away from the entrance, but when it is cold they'll be unceremoniously dumped on the porch. There should be a few... death is part of life. If there aren't any at all, or just a few very old corpses, maybe that hints at problems inside.

### The lift test

Put one hand under the back of the bottom board and lift the hive an inch or two. Is it heavy or light? If heavy, that suggests that the colony may have plenty of honey stores. If light, you probably need to feed, and soon!

What is “heavy” versus “light”? Everybody's strength and perception are different, so you need to calibrate your “internal lift sensor” ahead of time, during warm weather. Do the one-handed lift test and try to assign a “very heavy”/“heavy”/“medium”/“light”/“very light” attribution to what you feel. Then do an in-depth inspection of that hive, carefully noting how much stored honey makes it weigh as much as you felt. Do this on several hives until you feel comfortable that your assessment of “heavy” and “light” matches what you find inside. Be sure to keep in mind that the amount of brood and the configuration of equipment will affect weight too, so take that into account.



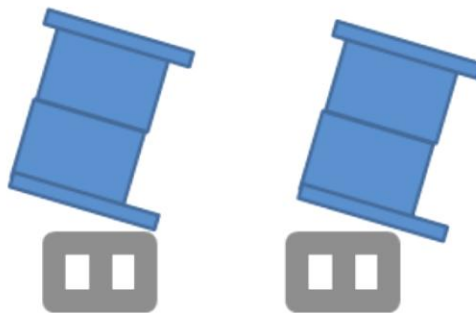
How much honey is stored in this hive? Lift it from the back to find out! The top box here is a Miller feeder; be sure to take the weight of that extra equipment into account.

Also, the pivot point of the hive when it is lifted will determine the relative feel (see diagram) so try to make each lift point as similar as possible.

### Knock knock!

A simple way to determine the basic state of a colony, even in the coldest weather, is to put your ear up against the side of the hive and give the box a couple of raps. You should hear a quick, loud “bzzzzzzzzzzzzzzzzzz!” in response. If instead you hear, “ ”, your bees may have passed on to The Big Hive in the Sky and further investigation is called for. Note that if the cluster is bunched on the opposite side of the hive and there are full frames of honey between your ear and the bees, the sound may be somewhat muffled. If that may be the case, listen on the other side too.

As an aside – when our colonies croak this winter, instead of telling people, “I don’t know what happened – they were just gone!” we should all agree to say, “My bees all went to the Winter Olympics!” Doesn’t that sound much more pleasant while being equally descriptive? And for folks who are truly clueless about what causes colony losses... who knows, maybe they did go to the Olympics! (See September 2014’s



The hive on the left will feel heavier than the hive on the right simply because of the relative position of the pivot point where it is being lifted. To enable assessments to be compared, ensure that each hive pivots at the same place.

“[Controlling Winter Losses](#)” for some tips on keeping your colonies alive in winter.)

### Take a peek

I’ll let you in on a secret... we don’t live in Michigan, Ohio or Alaska! We can lift the cover of our hives during winter for a quick look down inside without causing harm. A short blast of cold air does not harm adult honey bees. We aren’t going to pull out frames so delicate brood, warm and snug within the cluster, won’t be affected one bit by a brief look under the lid.

What are we looking for if we peek?

1. Where is the cluster? Is it way down in the bottom, suggesting that the bees haven’t yet consumed a whole lot of stores, or is it up top? If the latter, that may imply that the bees may have eaten their way up to the top and honey stores may be low.
2. How many seams between the frames have bees in them? More than half of the seams full of bees clearly reflects a reasonably nice-sized cluster of bees. If only a couple or three seams have bees, maybe this colony won’t make it to spring. The critical quantities (how many seams of bees are “enough”?) are all guess work; record your observations and learn from them based on what you find next spring.
3. How much honey can I see? Fat, white-capped honey cells are easy to see from above without any need to pull out frames.

### Warm-weather inspections

As mentioned, we don't live in the frozen tundra. During NC winters we are often blessed with daytime high temperatures in the mid to upper 60s. Such temperatures are more than adequate for in-hive, pull-out-frames inspections. However as a matter of personal philosophy, I do all I can to resist the temptation to do invasive, down-to-the-bones inspections during winter months, regardless of how nice the weather is. Why? Because I try to only open up hives when there is a reason to do so. Don't get me wrong – a perfectly valid reason for an inspection is “to see how things are going.” But as I have already described, I don't have to open up the hive to determine the quantity of stores and mortality status of the colony. As far as other circumstances, such as whether the colony is queen-right or has brood issues, if I find a problem in December, January or February, what can I do about it? Nothing. I cannot requeen in winter because queens aren't available. I don't recommend combining colonies in winter because combining is stressful. If the colony doesn't have much, or any, brood, is that a problem or are they just wonderfully thrifty? If there is absolutely nothing I can do to fix a problem, why cause disruption to identify it? There will be time for that as spring approaches.

That isn't to say that there never is a reason to do a full mid-winter inspection (in beekeeping, never say never!), but such a reason should truly exist before pulling out frames. Maybe you are a first-year beekeeper and you need to educate yourself about what the inside of a hive looks like in January.... Okay, that's a legitimate reason, but once you've learned your lesson you don't need to use that reason again.

### A word about feeding

A question I get a lot this time of year is, “Should I be feeding my bees?” I would like to respond, “How the heck should I know? They are your bees. Do they need feeding? If they do, feed them!” But in my ongoing struggle to be kind and supportive, I explain how NC Piedmont

flora sometimes provides enough nectar for winter stores but often (in my area) does not, so fall feeding is commonly needed. That isn't the bees' fault; it is North Carolina's fault. Honey bees are not native here so there is no inherent natural law that the flora must support them year-round. If the bees don't take up enough sugar in the fall to make the hive heavy, then feeding will likely be needed going into winter. Our bees need something like 50 pounds of carbohydrates, plus or minus, to get through the winter; at 50 cents per pound of sugar, that's \$25 (assuming we are supplying all of it, which we usually aren't). Replacement bee packages cost about \$125 and nucs are about \$175. You do the math and decide whether you want to feed or not.

The only way to know if your bees need feeding is to check their stores. We cannot rely on the calendar or what our neighbor is doing... we have to check our own hives ourselves. I've described two ways to easily do that: one is to take the cover off and look; the second is to lift the hive from the back. Those methods should be considered complementary to each other, not substitutes (do both).

January 2015's “[Yum, Yum, Eat 'Em Up!](#)” discusses feeding in more detail (why, what and when to feed). October 2014's “[A Few More Wintering Tips](#)” describes several different ways to feed. Note that feeding for winter survival means feeding sugar. Although required for brood-rearing, pollen (protein) is not necessary for overwintering survival, and typically there is plenty of pollen in the Piedmont from maple trees when it is needed. Focus on what is important and what is lacking; don't bother with things that aren't critical and are already abundant. (How can you know whether or not your hives have adequate pollen? Look!)

### Now what?

Since non-invasive winter inspections can be completed easily and quickly, what is a beekeeper supposed to do during the winter to fill her/his time? January 2014's “[It's Quiet Out There... Too Quiet!](#)” has some good suggestions for winter-weather beekeeping tasks.

Equipment repair and construction, educational reading, attending bee school and ordering packages are just a few things that can be done in cold weather. Spring is coming (I promise!).

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### **Did you know...**

The ancient Roman calendar only had ten months, starting with March and going to December (notice that “Septem”, “Octo”, “Novem”, and “Decem” mean seven, eight, nine and ten, respectively). The winter time period didn’t have months; people just waited around for spring, when the new year started over again with March. For beekeepers, that was a very logical system!