



Working the Hive

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Once you have installed a package, nuc, or swarm into your hive box, you will need to inspect them on a regular basis. Every time you open the hive you should already have a purpose and goal in mind for that inspection. You should also make sure to have all the necessary equipment and supplies you will need to achieve your goal. That doesn't mean that things won't change once you start your inspection but having a clear purpose will help you keep your time in the hive to a minimum. As you start your inspection or task move slowly and carefully trying not to roll or crush bees. Only do inspections when it is warmer than 55°F outside. In the low desert of Arizona, bees can be worked most of the year. In higher elevations you will want to stay out of the hives when temperatures drop below 55 degrees F.

Reasons to Inspect the Hive

Springtime is a very important time to check your hives often.

- You should make sure they haven't run out of honey stores. If they are running low and there isn't much in bloom yet, add sugar or syrup.
- You should check for evidence of a laying queen (eggs) and make sure that she's laying more worker brood (flat cappings) than drone brood (domed cappings). If there's not much in bloom yet, you may want to feed a pollen substitute.
- If the queen is laying too much drone brood or not enough brood in general, you may want to replace the queen.
- As soon as the first strong bloom occurs you will want to assess the strength of the hive and if they are building up quickly.
- Check for pests such as small hive beetles and varroa mites. Treat if necessary. You will want very low numbers of varroa mites present (<3/100). If you treat for varroa mite you will need to check to see that the treatment was successful a few days after completion. For more information on treating for Varroa mites see the publication 'Varroa mite management'.

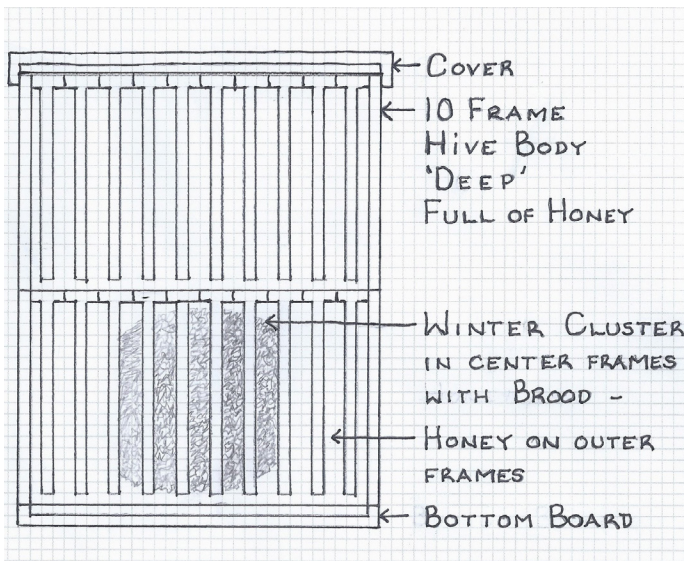


Colorful bee bread in frame

- Check for queen cells or swarm cells and manage accordingly. This is a great time to make splits if the hive is strong enough.
- Check the brood boxes for space and be ready to add the queen excluder and honey supers when the brood frames get 80% full.
- Check 7 days after introducing a new queen.
- Check 7 days after making a split.
- Check 14 days after installing a swarm or new package, but make sure they don't run out of feed.

Summertime and during Nectar flows are also important times to check the hives.

- Check varroa mite levels and verify successful treatment
- Check for open space in honey supers and add supers as necessary
- Check for strength of queen and her laying pattern
- If you are moving your hives between nectar crops, do this check in between crops. Remove the honey super from the last crop, inspect the hive for health, then place empty supers for the new crop.



Drawing of cut away hive with brood in bottom center and honey stores around.

Preparation for the Winter months is very important if you want to have healthy hives next year.

- After removing honey supers make sure the colony has good food sources to fill the brood boxes with pollen for bee bread and nectar for honey. You want fat bees for the winter months.
- The brood nest should be positioned in the center frames with honey frames on the outer frames.
- The queen should slow egg laying and the brood nest size should get smaller. The empty cells should then be filled with food stores for the winter months.
- The brood nest should be in the bottom box with the food stores both on the sides and in the upper box. Bees move upwards as they feed during the winter months.
- Heft the boxes to know by feel how heavy they are and check the weight during the winter to know if they are running out of food stores. Add dry sugar, candy boards, or fondant if they run low on honey stores. Add a pollen substitute or pollen patty if they run low on bee bread. For more information on feeding your bees, see the publication 'Feeding your bees'.

There are some circumstances where you should NOT inspect a hive.

- On very windy days
- On cold winter days
- When it is raining heavily
- During the night
- Right after requeening
- Right after boxing a swarm



Hive tool with curved end for lifting frames

Going out to the Apiary

To prepare for your visit to the apiary there are several things you should take with you.

- Two hive tools, if there are any signs of disease be sure to sanitize between hives
- Matches, lighter, propane torch
- Dry fuel for the smoker
- Smoker
- A container of water to wash sticky hands, and bottle of water for you to drink
- Some newspaper, to help start smoker, to unite hives, or wrap comb samples in
- Hive notes, diary, writing utensil, marker or lumber crayon
- Duct tape and screen to close gaps, openings, or holes
- A nonflammable container to put the hot smoker in
- Cell phone, to take photos, call a friend or mentor, look up help
- Sugar Syrup or Pollen patties if needed
- Mite treatment if needed and proper personal protective equipment

Your Hive Notes

There are many downloadable and online resources for keeping track of what you see and do inside your hive each visit. Choose one that works well for you. The important thing is to keep a written record of what you do, what you see, and what needs to be done the next visit. Each hive will need to be numbered or lettered so that the notes can be kept separate for each hive. You could take a clipboard with you to keep track of the notes and then enter them into your permanent notes later when you get back home but be sure to write all the details that will help you remember what needs to be done, what worked, what didn't work, so you continue to become a better beekeeper. At a minimum your notes should include:

- The date of the visit
- Weather conditions



Bee suit, veil and gloves



Smoker and lighter

- Colony strength
- Work done that day
- Pests or Problems seen
- Mite treatments used

Dressing Appropriately

If you don't like getting stung you stand the best chance of avoiding stings when wearing full protective equipment which includes leather gloves with long sleeves and elastic, a full jacket or suit, and a veil. It's best if all of this protective gear fits well and has some ventilation. White is the classic color but any light color will do, as long as you can easily see when bees have landed on you. Dark colors (black, brown) make bees think you are a predator and they will treat you accordingly. It will be important to shoo them off before you remove your jacket and veil. Do not wear any perfumes, colognes, or lotions with a scent as this may irritate the bees. You always need to be prepared for hives that may have been taken over by Africanized bees. These bees can be very defensive and easily provoked. They will not only attack but will not calm down as quickly or easily. If you are stung, be sure to wash the item of clothing before returning to the hives. The alarm pheromone will still be marking you as a predator and could stir up a defense reaction before you even open the hive. At the very minimum, always wear your veil.

If your bees have become defensive while you are working them, and smoke isn't calming them down, you should finish your task as quickly as possible and close the hive.

Don't swat at bees as this only irritates them. If a worker lands in your hair, kill her quickly by squishing or pinching her. If you are attacked by Africanized bees, get away as quickly as possible, and get inside an empty building or car. Then you can squish the bees that got in with you, but no more will join the attack.

Smoking

The smoker is an essential tool when working with bees. Learning to get your smoker lit and keeping it lit long enough to accomplish your work is an essential skill. You should never open a hive without the use of smoke. A few puffs of smoke at the entry will mask the alarm pheromones of the guard bees and allow all the hive bees to continue working at their regular tasks. Another puff of smoke on the top of the hive when you lift off the lid should keep all the bees calm and attending to their tasks. Smoke not only masks the alarm pheromone to allow you easy entry to work the hive, but it also can mask the pheromone you've been tagged with after you've been stung. A few puffs on the spot of attack can cover up the tag until you're able to finish your task for the day. Be sure to wash your protective clothes before returning to the hive. Smoke is also useful to drive bees away from where you want to work or inspect. Be careful not to over smoke as this can flavor your honey as well as irritate the bees.

Practice lighting the smoker a few times before going into the apiary with it. Try a few different types of fuel that are readily available to you and choose your favorite. Any of the following will work:

- Straw or dry grass
- Dry evergreen needles (pine) or cones
- Bark chips or bark mulch
- Nut shells
- Rice hulls
- Untreated burlap
- Wood shavings or sawdust
- Cotton rags
- Dry horse or cow dung
- Cotton stuffing

Some materials will burn but may produce toxic fumes that will kill your bees. Do not use synthetic materials or petroleum products, even as starters, and nothing that has pesticide residue. Some materials will burn too hot, so mix them with materials that burn slowly and cooler.

To light your smoker:

1. Clean the smoker and scrape out anything clogging the nozzle.
2. Place your starter fuel in the bottom of the smoker and cover with a small amount of burning fuel.
3. Light the starter and give the smoker a few puffs of the bellows to get flames burning well.
4. Add more burning fuel and continue pumping the bellows until the smoker is full and burning well. It should continue to burn after you quit pumping the bellows.
5. Once it is going, close the smoker lid tightly, and pump the bellows occasionally to keep the fire burning. A properly filled smoker should keep smoking for 30 minutes. Have more fuel ready to add to the smoker if your work in the apiary is going to take longer. Have the lighter ready in case the smoker goes out.
6. After you are finished in the apiary for the day, you can open the smoker, pump the bellows to get a good flame going, then place your hive tools inside the smoker to sterilize the tools. They will get very hot, so be careful when removing them and douse them with cold water before storing them.
7. Empty the remaining fuel and ashes onto dirt or pavement and douse them with water.
8. Make sure the smoker is cool before putting it away.

Inspecting a Colony

The inspection will vary according to the management goals you have in mind for the week, but there are several steps in the procedure that will be the same.

1. Approach the hive from the side or back. Make mental notes of activity happening at the entry to the hive. Do not stand in front of the hive as you will be blocking the flight path.
2. Puff some smoke into the entrance and wait a few seconds for the bees to react.



Frame holder on side of hive with two frames.

3. Pry off the lid and puff some smoke through the inner cover. Then gently pry off the inner cover and puff some smoke between the frames on the side you will be starting the inspection. Prop the cover and inner cover against the hive near the entry so any bees clinging to them will be able to easily reenter the hive. You may also want to set up your apiary so that you can use the top of the adjacent hive as a place to stack covers and hive bodies.
4. Place your frame holder on the side of the hive box. Use your hive tool to gently loosen the frames closest to you. Remove the outside frame, inspect quickly by scanning in a zig zag pattern on one side, flip the frame over and repeat on the other side, then place in the frame holder. Remove the next frame, inspect quickly, then place in the frame holder. After you have removed two or three frames to the frame holder you can begin to slide frames into the open space instead of removing them from the hive body. Remember that outside frames will most likely contain honey stores and middle frames will contain the brood nest. It's important to keep the brood nest warm, so keep your inspection quick.
5. Be very careful when examining the frames containing brood. The queen usually lays in a concentric circular pattern, so the oldest egg, larvae, or capped brood will be towards the center of the frame and the youngest egg towards the outer edges. Once you have found new eggs, be very careful to examine frames over the hive. The queen is most likely to be on frames with new egg and you don't want her to fall off the frame and land outside the hive.
6. Depending upon the time of year and what is going on in your colony you will usually be doing quick inspections to look for issues or problems. Also check for what's going on in the hive that shows they are healthy and

growing. Check to see that they've built honeycomb in all frames. See if they've filled all the comb with honey, pollen or brood. Do you need to add a super? Keep track of how large the brood nest is and the quantity of drone brood. Is there too much drone? Is there every age of brood? The ideal ratio of eggs to larvae to capped brood is 1:2:4. Its not necessary to find the queen every time if you can see signs that she's laying well and new eggs. Are there any supercedure cups or queen cells? Do they have an egg or larvae in them? Are they sealed? You may need to replace the queen if she's not laying strong or if she's laying too much drone. If there are supercedure cells filled or capped you may need to replace your queen. You may need to make splits if there are queen cells being capped. Make note of any changes of behavior within the colony from the previous visit. Always keep an eye out for diseases, pests, or issues. You may have to do some research after your visit and determine the best course of action.

7. Once you have accomplished you purpose for inspection, all frames should be returned to their original position in the hive box. It is a good idea during the inspection to clean bur comb, propolis, and excess wax that make removing or replacing the frames difficult. Place this removed material in a closed container. This wax can be melted down later for your use. Remember that wax and propolis are valuable commodities.

Irritable Bees

Bees are more likely to be irritable when they are hungry, and your hive is harder to work when the foragers are in the hive instead of out foraging. Remember that approximately a third of your worker bees will be foragers, so doing your inspections when a third of the workers are out of the hive is a good idea. There are other reasons for your bees to be irritable including:

- The genetics of the queen,
- Recent or reoccurring disturbance by pests, skunks, bears, etc.
- Nectar dearth
- Thunderstorms
- Cold, wet, rainy days or Hot, humid, windy days
- Too early in the morning or late in the afternoon
- Rough handling of the hive
- Disease or pest infestation
- Robbing is actively happening
- Presence of strong odors
- Absence of queen

References

- The Backyard Beekeeper: An Absolute Beginner's Guide to Keeping Bees in Your Yard and Garden (4th Edition) by Kim Flottum
- The Beekeeper's Handbook (4th Edition) by Diana Sammataro and Alphonso Avitabile
- The Complete Bee Handbook by Dewey Caron



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