
BEGINNING BEEKEEPING

Getting ready for your bees

Beekeeping Vocabulary

Abscond: The honey bee colony leaves its hive and all its resources that cannot be taken with them. The more resources that must be left behind, the worse the conditions must be at the hive to induce the bees to abandon their hive.

Bearding: A significant number of bees assemble and sometimes form a festoon along the outside of the hive. They do this so that the internal temperature of the hive does not become too hot.

Bee bread: Pollen, mixed with honey bee saliva, stored in honeycomb cells, and sealed with a drop of honey.

Brood: Bee brood means the entire bee developmental stage from egg until the time when the growing bee emerges from its honeycomb cell as an adult bee. Open brood refers to the earliest part of this stage, during which an egg is laid and covered with food (royal jelly). Closed brood refers to the later part of this stage when those cells are covered over (capped).

Brood box, Deep box: An open-ended box with rests along the inner narrower sides for frames. These are referred to as deep boxes, because they are about one-third deeper than medium boxes. These are referred to as brood boxes, because most beekeepers place this size of box at the bottom of the hive, which is the location bees prefer to use for raising their brood.

Brood nest: The set of adjacent frames that contain brood. These frames can be side to side and above and below each other.

Cell: Honeycomb cavity that eggs and food resources are stored within the hive.

Colony: This is the population of bees within a hive. It is helpful to think of these bees as a single animal, a superorganism. Different types of honey bees within a colony are like the different parts of a body.

Dearth: A period of time, usually during summer, when the local nectar supply is either very limited or absent altogether. This can be caused by your local environment, especially in agricultural areas where the landscape is dominated by only a few floral sources, creating a boom then bust nectar season for the bees. It can also be caused by the weather, like when it stops raining for days on end.

It is critical for the beekeeper to ensure that each honey bee colony has adequate nectar and pollen available within the hive to survive a dearth. If not, the beekeeper must provide sugar syrup and a pollen substitute.

Drone bees: Adult male bees. Their essential purpose is to mate with virgin queen bees. In appearance, they are much wider than worker bees and have enormous eyes.

Feeder frame: Frame designed to hold sugar syrup

Flow: A period of time during which there is abundant nectar available to the colony. For example, many locales within our region experience a strong goldenrod flow during the last few weeks of summer.

Forage: Sources of food, nectar and pollen, for honey bees. The forage for a colony is the set of trees and flowers within about a mile and a half from the hive that produce pollen and nectar during days when daytime highs are above about 50 degrees.

Forager bees: These are the mature adult worker bees that fly from the hive to forage for food.

Frames: Frames rest inside of hive boxes and eventually contain honeycomb. Frames that only contain foundation are often referred to as blank frames. Frames that have had honeycomb built or drawn out on top of foundation are often referred to as drawn frames.

Foundation: The inner part of a frame containing an imprinted outline of honeycomb cells. This imprint becomes the basis bees use to build out honeycomb. It takes honey bees about eight times as much nectar to build or draw out honeycomb as it does for them to fill that drawn out honeycomb with honey.

Guard bees: Mature worker bees at the entrance to the hive and at the tops of the frames within the hive. Their job is to protect and defend the hive from all intruders. The beekeeper should use a combination of smoke and calm movements to avoid triggering guard bees from defending the hive.

Hive: This is the place where the honey bee colony lives. Note that the honey bee colony itself actually determines both where the hive is and how much of it its space is actually theirs to occupy and defend. The beekeeper provides the wooden structure, but the bees might decide to abscond to a different hive. Sometimes the colony might occupy the outside or even adjacent surfaces of the wooden structure, and sometimes it might not even occupy all the inside parts.

Honey: Concentrated flower nectar. Bees make honey by dehydrating the nectar they gather from flowers. When the beekeeper cannot isolate a single floral source for the nectar, the resulting honey is called wildflower honey. Note that concentrated sugar syrup is not honey.

Nectar: This is the carbohydrate source for bees. It always comes from floral sources. Sugar syrup can be used as a weak substitute when nectar is not sufficiently abundant.

Nuc: A nucleus or small colony of bees. Inside a nuc is a mated queen, worker bees, and drawn honeycomb with resources to launch a colony. There are usually five frames in a nuc, at least two of which have brood. Under ordinary conditions, a strong nuc will quickly outgrow its small hive and should promptly be placed within a normal sized hive.

Nurse bees: Young worker bees. Their primary jobs are to care for brood, produce beeswax, and clean the hive. They almost never sting and have never left the hive.

Package: A mated queen, can of sugar syrup, and a few thousand bees that were shaken off our different frames caged inside of a screened box. This has the ingredients for a colony, but it faces an uphill battle. The

worker bees still must accept this new queen. They must also accept their new hive and not abscond. If both of these are accepted, they must begin their colony without any drawn honeycomb.

Pollen: This is the protein source for bees. It always comes from floral sources, but pollen substitutes should be used whenever pollen is insufficiently available to the colony.

Propolis: A dark and very sticky substance derived from tree resin that honey bees primarily use to seal gaps within the hive.

Queen bee: The mother of the bee colony. She is easily the most essential member of the colony. The colony will quickly collapse without a queen bee.

Queen cell: An enlarged cell, about 5 times larger than ordinary, for the rearing of a replacement or additional queen. If the worker bees within the colony determine that the existing queen should be replaced, they will create queen cells known as supersedure cells along the face of the honeycomb. If the colony is preparing to swarm, worker bees will create queen cells along the bottom edge of a frame.

Robbing: Especially during a dearth, forager bees will rob weaker colonies of their resources. Robbing can quickly overwhelm and destroy a weak colony. One way to minimize robbing is to reduce hive entrances and hive inspections during a dearth.

Small hive beetle: A hive pest that will eventually consume all hive resources, including brood. Effective control strategies include siting hives in full sunshine and placing thick paper towels along the top of hive frames.

Smoke: Smoke used for beekeeping should be dense and white. Gray or wispy smoke is ineffective. Popular fuel sources include burlap, pine shavings, evergreen needles, cardboard, leaves, and wood pellets.

Super box, Medium box: An open-ended box with rests along the inner narrower sides for frames. These are referred to as medium boxes, because their depth is in between that of deep boxes and shallow boxes. These are referred to as supers, because they are frequently placed on top of brood boxes to be used primarily for honey storage.

Sugar syrup: Granulated white table sugar dissolved into water. This is used as a nectar substitute. Beekeepers feed sugar syrup to a honey bee colony primarily for three purposes. The first is to supplement their available nectar for drawing out honeycomb. The second is to supplement limited nectar supply during a warm weather dearth. The third is to supplement a limited supply of honey within the hive before winter.

The first two purposes use sugar syrup made with a one-to-one ratio, by either weight or volume, of sugar to water. This is often referred to as light syrup. The third purpose uses sugar syrup made with a two-to-one ratio, by either weight or volume, of sugar to water. This is referred to as heavy syrup and requires hot water and lots of mixing to get that much sugar to dissolve into water.

Swarm: The honey bee colony splits into two parts. The larger part, including the queen bee, flies off to find a new hive in which to live. The smaller part remains in the original hive with brood, nurse bees, and one or

more queen cells. This is how the honey bee colony reproduces itself and is what the colony strives towards. Beekeepers try to manage the colony to prevent this natural swarming tendency.

Varroa: Parasitic mite that attaches to honey bees and spreads disease between colonies and within a colony. Easily the single greatest threat to a honey bee colony today.

Worker bees: Adult female bees within a colony. These make up the overwhelming majority of all bees within a colony.

Introduction

Beekeeping is safely managing honey bee colonies so that colonies are healthy and productive. Beekeeping begins with the beekeeper and the other nearby people and animals staying safe. Beekeeping can be risky, but that risk can be managed through a combination of education, safe practices, and protective equipment.

Successful beekeeping requires healthy bees. These days, healthy bees almost always require beekeeper interventions and management. Think of beekeeping like managing a cattle ranch. A successful rancher cannot assume that her cattle herd is healthy by merely watching them grazing from a distance. Not only must she ensure they have adequate feed and water available every day, but she must also check them for signs of disease and treat their ailments if necessary. The same is true in beekeeping.

We keep bees, because doing so can provide us with benefits. For most of us, the primary benefit is honey, but it could also be pollination or environmental restoration. Productive colonies do provide us with lots of good things. To make the most out of our beekeeping, we should be clear about which of these benefits matter the most to us and tailor our management strategy towards that end. Managing bees for maximum honey production requires different tactics than managing bees for pollination.

For your first beekeeping season, however, this does not matter. All the good tactics are the same at the beginning. Your only goal for your first year with bees in our region should be to keep your colonies healthy until the following Spring. Beekeepers call this successfully overwintering.

Successfully overwintering a colony of bees outside in a wooden box has always been a challenge in our region. Prior to the late 1980s, the best management strategy for overwintering successfully was to ensure that the bees had both adequate food and shelter. The most important questions involved queen health, how much honey to leave the bees and how many brood boxes to use in the hive.

Since then, however, successfully overwintering has become significantly more difficult. This is largely due to a few invasive pests from overseas. The worst of these, by far, is the varroa destructor mite. This parasitic mite, left untreated, can easily kill even the most well-fed and well-insulated honey bee colony. Honey bee colony management these days requires diligent attention to these pests.

This cannot be overemphasized, because the effect of varroa is often not seen in uninspected colonies until that colony is near collapse. In our region, varroa effects often take until the Fall or even sometimes longer than one season to become apparent with casual observation. Thankfully, it is currently easier than at any time since the appearance of varroa in the late 1980s to monitor and control these parasites.

Tools

There are only two essential beekeeping tools. The first, and most indispensable, is the smoker. The smoker should provide dense white smoke when used. There are many styles of smoker and many types of smoker fuel. They all can work. As a new beekeeper, the most important things to consider are finding a smoker fuel that you can easily light and refill that also does not irritate you. As a beekeeper, you will often need to be in a position where you will be sticking your face into and breathing this smoke. Do yourself a favor and spend some time to find a smoker fuel whose smoke you like or at least can tolerate. As well, keep a long grill lighter with you to light your smoker.

The other essential tool is the hive tool. The hive tool is used for prying and scraping. It should be kept sharp. You would be surprised at how hard it can be to lift boxes or frames that have been glued together with honeycomb and propolis. Your hive tool will help you slice through the sticky and pry apart the stuck. Like smokers, there are numerous styles, but the most important thing is getting used to using it.

Next down on the rung of beekeeping tools are the frame grabber, pocket knife, and bee brush. I use a frame grabber most of the time, because it helps keep my fingers from getting sore. A bee brush is great at moving a lot of bees without crushing them.

Protective Equipment

The extent of your protective equipment depends entirely on your personal situation. Of course, the more sensitive or allergic you are to insect stings or other envenomation, the more protection you should have. Do not allow anyone to convince you otherwise. Similarly, if you keep bees in areas with populations of Africanized honey bees, you should have more protection. Additionally, your use of protective equipment also depends on your ability to withstand repeated stings without making the situation even worse. For example, if you are stung while moving a hive box, will that sting result in you dropping that box, which will result in a whole lot more stings? Donning protective equipment is not a decision that can be made in those moments. I would encourage new beekeepers to wear more protection than they think they need.

The absolute minimum for a new beekeeper is a veil. Defensive bees aim for your head. Even when you have been stung countless times and no longer have any reaction to bee stings, it always hurts when you are stung on the eyelid or lip. Trust me. Veils only work if the mesh screen is away from your skin. Some veil styles do not stick out very far from your face and require the use of a hat with a brim underneath. The most common piece of protective equipment is a bee jacket, which incorporates the veil into a thick jacket.

One of the most frequently overlooked gaps in protection is the ankles. If your protection does not involve a full bee suit with pants included or your thick pants are not tucked into your boots, you will eventually be stung on the ankles or up your legs. Trust me. The solution is elastic on the cuffs of pants or taping the ends of your pants to your shoes.

Aside from increased cost, the downsides to protective equipment are heat retention and movement restriction. The loss of dexterity is the main reason why gloves are the most debated piece of protective equipment. You simply cannot be as dexterous while wearing thick leather gloves. To some extent, this is

alleviated with the use of a frame grabber but not entirely. An elegant solution to this is the use of nitrile gloves. Bees do not tend to sting nitrile and you retain dexterity. For new beekeepers, I recommend that you begin by wearing nitrile gloves.

Hive location

Place your hives in sunny locations that are protected from high winds and at least ten yards away from penned animals, doorways, and walkways. Sunshine protects the hive from small hive beetle infestations. High winds can rip the top covers off hives. Chained or penned animals can be attacked by bees, frightened by bees, and can also kick over hives if the hive is too close. Ten yards away or separated by a tall fence is about enough separation. Bees will not usually be defensive at that distance. Also, site your hive away from paths that people or animals often use. Your bees are more likely to abscond if they are bothered by the traffic around their hive.

Additionally, bees need a nearby water source if there is insufficient dew or rainfall. Do not allow that water source to be your neighbor's pool. If you need to provide a water source, be sure to provide one that contains a mat of floating straw or plants that will prevent mass drowning.

Ideally, bee hives should be placed up off the ground on a hive stand. A hive stand can be anything from an old pallet to an outdoor table. Two cinder blocks on their sides can make a serviceable hive stand. Similarly, a hive stand for multiple hives can be constructed from cinder blocks and 4x4 posts. If you have skunks in your area, elevating the hives at least a foot above ground will deter them.

Planning for your bees

Colony management plan

Successfully Overwintering

Your first-year goal should be to successfully overwinter your colony. Most experienced beekeepers in our region use a double brood box hive setup to accomplish this. This means that by the onset of winter, your bee colony will need to build out their hive's resources and grow their population enough to fill two brood boxes.

Establishment

Introduce your bees to their new hive home. Their new hive should start as a single deep box filled with frames and a full frame feeder. Once installed in their new hive, they should be left undisturbed for the first week. While tempting, you should avoid opening the hive or even going near the hive to decrease the likelihood that your new bees will abscond. The goal for this initial stage is for your colony to accept their new hive.

Feeding Your Bees

During its first season, your new colony should be fed all the light syrup that it can consume. Even though there will be natural nectar available to them, they will greatly benefit from this supplementation as they have an enormous amount of honeycomb to draw out.

You should plan on refilling your feeder frame with light syrup once a week throughout the season. You should plan on pausing this supplemental feeding when you notice that they are no longer consuming it. You should also pause this feeding if you notice that this syrup is being stored by the bees within the central area of frames with brood. Resume it once they begin consuming it again. You can stop this feeding once the daytime high temperature starts to regularly stay below 60 degrees in the Fall.

Colony Growth

Hive Inspections

As your colony grows, you should plan to inspect your hive about once every two weeks during your first year. Your goal for each inspection is to try to determine what is going on with the colony. Your bees cannot speak to you, so the point of the inspection is to observe your bees to figure out what is happening with them.

To that end, your inspection should seek to answer a few questions. First, is the queen alive and laying? The presence of brood, particularly open brood, will answer that question for you. The presence of queen cells, especially on the face of the honeycomb, along with the absence of open brood, suggests that the queen is gone. Second, is the colony preparing to swarm? The presence of queen cells along the bottom of the frame would tell you that they are indeed making swarm preparations.

Third, do they have enough nectar and pollen coming in? The presence of significant capped honey, uncapped honey or nectar, and beebread or pollen would tell you that they do have these resources coming in. You will notice, as the colony grows, how the amounts of these resources change from inspection to inspection. Another indicator of a well-fed colony is the presence of lots of royal jelly covering the open brood on brood frames.

Fourth, does the colony have enough room? On brood frames, is there open space between the large central area that contains the brood and the outer edges of the frame? If there is no or very little space between the capped honey or beebread and the brood, then they are out of room. This is known as being honey bound. Otherwise, they probably have enough space.

Fifth, how bad is the pest burden within the hive? Do you notice more than nine small hive beetles? If so, you should add paper towels. During your varroa mite wash, do you count more than five mites? If so, you should treat for varroa mites. Otherwise, treatments are not warranted.

In performing hive inspections, you will learn a lot about your bees. Simultaneously, you will learn how to behave around bees in such a way as to not provoke their threat response. In other words, these hive inspections will teach you how to be a successful beekeeper. There is a learning curve to this and the bees

themselves are good teachers. Consequently, after your first year, you may not need to perform hive inspections as frequently.

Adding Your Second Brood Box

Bees will not draw honeycomb on frames above frames that are not filled with resources. In general, your bees will not even occupy that space of the hive. This creates an opportunity for pests like the small hive beetle to freely occupy that space. As a result, you should wait to add the second brood box until the bees are ready for it. Only add your second brood box once there are bees covering all the eight frames in your bottom brood box or if you notice that they are otherwise out of room.

Pest Management

Varroa Mites

Despite what may be said on the Internet, there is no silver bullet in beekeeping for eliminating varroa mites. Your colony management plan must include a strategy for managing these deadly parasites. The goal for your pest management should be to manage not eradicate these pests. In other words, keep the varroa mite population at low enough levels that your well-fed colony can still thrive.

The key to such a pest management plan is monitoring. Plan on incorporating a varroa mite wash as a component of your regular hive inspection. If you count more than 5 mites, you should treat for varroa mites. Otherwise, you should not.

There are several treatments for varroa mites that use organic acids. Unfortunately, all of them also cause harm to your bees. The one that is easiest for a new beekeeper to use is formic acid, and the easiest to use formulation of this is the product called Mite Away Quick Strips. You should only use this product if your colony has at least six completely covered frames of bees. You also cannot use this product if the daily high temperature exceeds 85 degrees on the day of application and for the following three days. Further, to reduce harm to your bees, especially your queen, apply Mite Away Quick Strips at only half of its manufacturer recommended dosage.

Small Hive Beetles

It is much easier to monitor for small hive beetles than for varroa mites, because you can see them scurry around the hive. Most often, you will see small hive beetles under the top cover of the hive. So, every time you feed your bees and every time you inspect your hive, you can also count and monitor the number of small hive beetles. If you count more than 9 living small hive beetles in your hive, you should treat for small hive beetles. Otherwise, you do not need a treatment.

Aside from ensuring that your hive is in full sunshine, a very effective and easy treatment for small hive beetles is to place very thick paper towels or even unscented dust mop pads above your top frames. Your bees will tend to herd these beetles upwards, and the beetles, once caught by the fibers from these towels, cannot escape. In time, your bees will chew up and discard these towels outside of their hive.

Summer Dearth

During most years in our region, there are periods of time during mid to late summer when there are few if any floral sources producing nectar. These times of dearth are preceded by hot daytime temperatures and reduced rainfall. A lack of rainfall is an especially good predictor of a dearth. You should be ready to resume supplemental feeding at the onset of these dearth periods.

Fall Flow

During most years in our region, there will be a large nectar and pollen flow during the late summer and early Fall. While there are many wildflowers that bloom during this time, the primary floral sources are goldenrod and kudzu, sometimes known as Japanese knotweed. Goldenrod precedes kudzu. In some locales, this flow can be even larger than the Spring flow. In others, especially towards the East it will be smaller.

Preventing Fall swarms

Plan for this flow by ensuring that your colony has empty honeycomb cells to store this abundant nectar. A good tactic for this is to provide light syrup in the weeks leading up to the goldenrod bloom so that your bees draw out new honeycomb.

All too frequently, beekeepers in our region find that their colonies have swarmed during this flow. Neither the swarm nor the remaining colony is likely to survive a swarm at this time of year. Be on the lookout for queen cells during this time. If you do find swarm cells, scrape them off with your hive tool. If there is little or no room for the queen to lay eggs and you do not have any frames with drawn honeycomb, then uncap and harvest a frame or two of honey as a last-ditch effort to prevent the swarm.

Winter Preparations

Shelter

There are a wide range of opinions as to best practices for hives over our winters. Studies have shown that the most important factors related to successful overwintering are related to bee nutrition and pest management. Nevertheless, there is strong anecdotal evidence that using double deep brood boxes, a quilt box, and a wind break are effective in helping bees successfully overwinter.

A quilt box is simply a medium box with a screen stapled to its bottom, half-filled with wood shavings, and half a dozen ventilation holes drilled above the level of the wood shavings. The advantage of the quilt box is that it provides both insulation and moisture absorption for the hive. It functions like the insulated and ventilated attic of a house.

Food

Well-fed bees are more likely to successfully overwinter. Specifically, your bees should eat lots of pollen or pollen substitute during the Fall. Usually in many locales, our Fall flow can provide this protein to help these bees overwinter. If, however, you do not see ample beebread during your September inspections, provide your colony with a pollen substitute.

Additionally, your first-year bee colony needs all the honey stores that it can fit within its double deep hive. The best way to ensure adequate stores is to continue supplemental feeding throughout the season as explained elsewhere. If you find your colony has not enough stores by mid-September, feed them as much heavy sugar syrup as they will take.

Management Calendar for Our Region

January & February: Your bees are clustered, probably mostly within the top brood box. On sunny days when the air temperature is in the upper 40s or above, you might see a few bees fly out of the hive. By the end of this period, the queen has begun to lay eggs.

March: March is often the hardest month of the year for your colony. They are rearing new brood now but have not been able to make honey since the Fall. On a day when the air temperature is in the upper 50s or above and daytime high temperatures are predicted to be at this level or above for the next few days, feed your colony light syrup. Red maple and black cherry trees can be an important pollen source for your bees during the latter half of March and into April.

April: April can also be a difficult month for your colony. April is a month when many blooms begin but pay attention to your local weather forecast. Cold rainy weather, especially over several days can spoil your colony's ability to harvest pollen and nectar. Because there should be a lot of brood rearing in the hive, your colony needs a lot of both nectar and pollen. If your weather forecast predicts days of rain, supplement your feeding with a pollen substitute.

Conversely, successive days of good weather can yield surplus honey. If your weather forecast predicts this instead, pause your feeding and plan to add a super above your brood boxes to store this honey. Swarms can frequently occur during the last week of April, because your colony runs short of space in these weather conditions. Important floral sources during the last few weeks of April include apple and pear trees and dandelions.

May: May is the best month for your colony. The hive is full of young bees. The weather is usually perfect for bees, and there is abundant nectar and pollen available. If you have an overwintered colony, you will no longer need to do supplemental feeding until the summer dearth.

These conditions also make May the most likely month for successfully overwintered colonies to swarm. In strong colonies, the queen might be laying more than one thousand eggs every day. The colony might be making a few pounds of honey every day. For overwintered colonies, check every week that there is lots of space above the top brood box to store nectar. Additionally, if during warm days your colony is mostly residing in your top brood box while the bottom brood box is mostly empty, switch these two boxes. Place your top brood box on the bottom and move your bottom brood box to the top.

The latter half of May is also the time to resume regular varroa mite washes. Your colony's varroa mite population will increase alongside of the bees' increase in brood.

There is an abundance and wide variety of floral sources during May. Among the most important are wild olive in early May, black locust in mid-May, and the start of white Dutch clover at the end of May.

June: June is a continuation of May. There are abundant floral resources, swarms, and varroa mites. Continue to ensure that your bees have enough space above their brood to store resources.

If you plan to increase your number of hives, June is the safest month in which to do this. If you do not plan to increase your hives and most of the frames in both brood boxes are full of brood, then place an empty frame in between brood frames to decrease your colony's urge to swarm. If your super box is filled with honey, now is a good time to harvest that honey.

Continue to regularly monitor for varroa mites. Linden trees also known as basswood provide a big nectar flow in the middle of June. Sumac and Chinese Chestnut trees bloom during the latter half of the month.

July: Your colony will slow down noticeably during July. As temperatures increase and rainfall decreases, a primary concern for your colony is water. Ensure there is a reliable water source nearby. Continue to monitor for varroa. If there is little honey left in the hive, resume supplemental feeding. Important July floral sources include common milkweed and sweet white clover, both of which tend to bloom around the middle of the month. July can be the start of the summer dearth if rainfall levels are low.

August: August is a prime month for robbing. Bees from stronger hives will try to take honey from weaker hives. Ensure that your entrance reducer is installed. Continue regular varroa mite washes and provide supplemental feeding if needed. Especially if there is dry weather and a summer dearth, always minimize the amount of time that a hive is opened to prevent robbing.

The summer dearth often ends with the arrival of the goldenrod bloom at the end of August or the beginning of September. Numerous other late summer wildflowers like jewelweed appear around the same time.

September: September is when the colony's winter preparations increase. After the Fall flow of goldenrod and kudzu is over and the daily low temperatures take a notable decrease, the drones will be kicked out of the hive. If your hive needs feeding, September is the month to switch from light syrup to heavy syrup.

October: October is the last month for active beekeeping chores. Brood will be minimal inside of the hive. If your colony's honey stores are still too low, the first few weeks of October may be your last opportunity to feed them heavy syrup. Ensure that your entrance reducer is at its smallest opening and place your quilt box underneath the top cover.

November & December: Your colony enters its winter mode. It will cluster into a ball across several frames of honey. Throughout the winter they will slowly move across and consume this honey.

Working with your bees

Installing your bees

Before you open your bees, you should setup your hive with a single deep brood box. Place your bottom board onto your hive stand with one deep box on top of it. Use an entrance reducer under this brood box with the opening set at its narrowest. Have your top cover and a brick or some other heavy object set aside and ready.

Before you open your new bees, get yourself ready. Check your tools and protective equipment. You will not need your smoker, because you should not smoke your bees as you are installing them into their new hive. Remove any distractions and review these instructions. Know that when you open your new bees, they will immediately fly out. That is normal and not a problem. Expect to have a cloud of bees around you as you work. Bystanders, if they must be present, should be at least ten yards away. Remind yourself to stay calm and work smoothly.

Installing Your Nuc

If you are installing a nuc, begin by placing your filled feeder frame all the way to one side of your deep box. Then place one new frame to the opposite side of the box and another new frame just to the inside of the feeder frame. Keep your final new frame set aside and ready.

When transferring your bees, all the nuc's frames should be placed in the center of the brood box in exactly the same order and orientation as they were in the nuc box. You do not need to rush the process of transferring these frames to the new box. As you are moving each frame, look for the queen.

Once you have transferred all the frames, there will still be bees at the bottom of the nuc box. Look inside of the nuc box for the queen. If you do find her still in the nuc box, pick up the nuc box, turn it upside down just over top of your hive and shake it once. Lots of bees will fall into your hive. If you do not find the queen anywhere, assume that she was transferred to the new hive.

Place the final new frame into the hive so that you have eight frames and one feeder frame. Gently squeeze all your frames together, including the feeder frame, by pressing towards the middle from the outermost frames.

Finally, brush any bees off the top edges of your deep box and place the top cover on top. Place your brick or other heavy object on top of your cover. Open the entrance to the nuc box, close its lid, and place the entire nuc box on top of your cover so that its entrance faces in the same direction as your hive entrance. As long as the queen is inside of the new hive, all the bees from the nuc, whether flying around or in the nuc box, will make their way into the new hive.

Installing Your Bee Package

If you are installing a package, you will need something like a long twist tie or a piece of string. Begin your hive setup by placing your filled feeder frame all the way to one side of your deep box. Then place four new frames to the opposite side of the box and another new frame just to the inside of the feeder frame. Keep your remaining three frames set aside and ready. You will be shaking your new bees into the center of your hive, and this area should initially be free of frames.

There should be a tab and the top of a feeder can filling the opening of the package. That tab is attached to the queen, who is caged inside of a small wooden box. Set the package on top of your hive. Using your hive tool, gently pry the feeder can out of the opening while trying not to drop the queen cage into the package. You do not need to rush this process.

Once the feeder can and queen cage have been removed from the package, set the feeder can aside. With your twist tie, hang the queen cage at the top of one of the centermost frames so that the candy plug is facing upwards and the cage's screen is facing away from the frame.

The next step is to shake the new bees out of the package and into the center. Not every bee will come out, and one or two shakes is sufficient. Place the rest of your frames into the hive. Gently squeeze all your frames together, including the feeder frame, by pressing towards the middle from the outermost frames.

Finally, brush any bees off the top edges of your deep box and place the top cover on top. Place your brick or other heavy object on top of your cover. Place the package on top of your top cover so that its opening faces the same direction as your hive entrance. The bees still outside of the hive will gradually make their way into the new hive once they become aware that their queen is inside.

Feeding your bees

During your first year you should plan on continuously feeding your bees sugar syrup and possibly pollen substitute. During late Spring and early Summer, this may not be necessary if they are building up fast and drawing out honeycomb. Feed them light syrup in a feeder frame within the hive at least once every other week. Remember, your production goal is a hive with enough stored resources to successfully overwinter. Once daytime temperatures regularly stay below 60 degrees, the bees will no longer be able to consume sugar syrup.

Unlike beekeepers in the arid West, we rarely need to provide water to our colonies in our region. Nevertheless, if you live in an area, like a city, without water sources readily available, you will need to provide one for your bees. For a few colonies, the best are chicken waterers that are stuffed at the base with straw. Honey bees easily drown, and the straw provides a way for them to drink without falling into the water.

Hive Inspections

Safety

If you are a beekeeper, bee stings should not always be avoided. Obviously, if you an allergy, this advice should come from a physician. Otherwise, regular bee stings help prevent the development of a serious allergy. Two or three stings a month or several dozen a season will help prevent you developing an allergic reaction. Over time, you will develop little to no reaction to bee stings.

That noted, to prevent stings you should smoke a hive at its entrance immediately before opening the hive. There almost never needs to be much smoke. A little dense white smoke goes a long way.

Similarly, hives that are in full sun are much less defensive than those in the shade. By the same token, sunny days are less likely to provoke bees than cloudy or rainy days. As well, times when a nectar flow is happening are less likely to result in stings than during times when there is a dearth.

Once inside the hive, you should move hive components with the careful smoothness of a Tai Chi practitioner. Your movements should be smooth and never sudden or jarring. You do not want to provoke the bees past their threat response threshold. Once you do, they will head butt or sting you.

If you see bees looking at you at the top of the frame, know that these are likely guard bees. In such cases, you should gently use smoke on them. If you move them or jar the hive, they will sting you. As soon as they turn away from you, you can remove the frame. As soon as you notice them flying at your face, use smoke at the hive without delay to divert their attention away from you. Something like a chain reaction occurs within the colony when the threat response threshold has been crossed, and you can short circuit this reaction with smoke.

Whenever a sting does occur, do not allow yourself to make sudden or jerking movements. This will only make the situation worse. If you are unable to continue the inspection, quickly but carefully restore the hive while using smoke. Move at least twenty yards away from the hive before removing any protective equipment. Check for any bees that might still be on your outer clothing before removing anything.

Temperature

In general, you should avoid opening a hive when the air temperature is below 60 degrees. Even though bees can move at a lower temperature, their brood can easily be chilled at temperatures below 60 degrees.

An exception to this general rule is that you should always feed a starving colony. During colder temperatures, this should be done as quickly as possible. The risk of starvation is greater than the risk from chilled brood.

Dearth

During a dearth, hive inspections should be curtailed to the minimum. Mid to late summer, following a reduction in rainfall, is the most likely time for a dearth. Depending on the diversity of your forage, though, a dearth can happen at any time of the year. During these times, instead of full hive inspections, colonies should be fed, and hive entrances should be reduced.

During a prolonged dearth or during robbing, opening a hive should be avoided. You can detect robbing when you notice bees trying to gain entrance to a hive at the top cover or at the seam between boxes. When you notice that behavior on the outside of a hive, you should immediately reduce the entrance of a hive to the width of a single bee.

Reading your hive

Ordinarily, your colony will use the center frames for brood and the outer frames for honey. They will also use the frames above their brood nest to store honey. So, brood should be at the bottom and center of the hive. Honey should be on the sides and top of the hive. It is important to maintain this arrangement as you work with your bees. At times, such as during the Spring following a successful overwintering, your colony may only occupy the top of your double brood box hive. When temperatures are warm enough, you can move these boxes so that their brood is at the bottom.

There will be times, especially during hot and humid summer days, when many of your bees will cling to the outside of their hive. This is not a swarm. This is bearding, a way for them to avoid overheating the inside of the hive. It is normal.

Reading brood frames

Brood frames should contain an oval of open and closed brood in the central section of a brood frame. On a brood frame, the outer edge should contain honey. Immediately inside of that outer edge of honey should be beebread and pollen. The empty cells on a brood frame between the brood and the beebread are the cells available for the queen to lay new eggs.

If there is very little pollen or beebread on these frames, this is a sign that there is inadequate pollen within the hive. You should supplement their feed with a pollen substitute. If, on the other hand, there is very little space between the beebread and brood on these frames, this is a sign that the colony is running out of room for more brood. In this case, you should ensure that there are frames with empty space available adjacent to or immediately above the existing brood nest to prevent the colony from being honey-bound and likely to swarm.

Pests

Varroa

Unlike the other pests listed below, it is not possible to accurately assess the varroa mite population within a hive by eyesight alone. The varroa mite wash is therefore an important diagnostic tool for the beekeeper. It will tell you the number of varroa mites per 300 bees in your colony, which should guide your decision about treatment.

A simple method for conducting the varroa mite wash uses the following pieces of equipment: 2 clear plastic 16oz cups with lids, a 12-inch square of mesh fabric, 1 tablespoon of Dawn Ultra dish soap, ½ gallon of water, a ½ cup measuring cup, and a dishpan. The mesh fabric needs to have spaces within it that are small enough to retain worker bees and large enough for varroa mites to pass through. Varroa mites are about the size of a pinhead.

Begin by mixing one tablespoon of dish soap in ½ gallon of water. Cut the bottom ¾ of an inch off one of the clear plastic cups. If you use a hot knife to do this, the edge will not be as sharp. Place the mesh inside of the uncut cup and the cut cup inside of the mesh. Fill this combined cup about ¾ full with the dish soap and water mixture. Keep the lid available nearby.

You will be pouring a ½ cup of bees into this cup and swirling them around. As you swirl for about a minute, the varroa mites that had been clinging onto their bodies will fall to the bottom of the cup. Looking upwards at the bottom of the cup, you can count the number of mites that you see. Varroa mites are reddish and the size of a pinhead.

To gather a ½ cup of bees, take a brood frame from the outer edge of the brood nest. Shake the bees on that frame into your dishpan. The older forager bees will quickly fly away, leaving you with young nurse bees in

the dishpan. As the nurse bees disperse to form a single layer in the dishpan, look for the queen. If the queen is in the dishpan, be sure to get her back into the hive right away.

Tilt the dishpan and tap it so that these nurse bees clump into something like a pile. Then, carefully scoop them up in your ½ cup measuring cup. If the cup is overfull, then brush the overflow off. Pour this ½ cup of bees quickly into your plastic cup with the dish soap mixture and put its lid on.

Pickup this plastic cup and begin slowly swirling it around in a small circle with the palm of your hand on the lid. After about a minute all the varroa mites on your bees will have fallen through the mesh to the bottom of the plastic cup. Now remove the mesh along with the inner cup so that all you have left is the outer cup with the dish soap mixture and the varroa mites at the bottom. Count these mites. If you count more than 5 mites, then you should treat this hive for varroa mites.

Small Hive Beetles

Small hive beetles can be monitored by sight. You can easily kill those you see with your hive tool. If you count more than nine of them, consider the following treatment. Effective control of small hive beetles can be found by ensuring that the hive is in full sunlight and through using thick paper towels at the top of the hive. Use one layer of thick and fluffy food service paper towels, shop towels, or even unscented dry dust mop cloths. After a few weeks, your bees will chew these towels up and throw them out of the hive.

Wasps and yellow jackets

Wasps and yellow jackets are only rarely a problem for a honey bee colony. During periods of dearth, though, they can participate with other honey bees in the robbing and killing of weaker colonies. Large populations of wasps and yellow jackets, however, can be a problem for a honey bee colony.

Bears

If you know that there are bears nearby your hive, you will need to install an electric fence. They will find your hive. Once found, bears will thoroughly destroy your hive, including the woodenware.

Adding your second brood box

To add your second brood box, remove your feeder frame from the bottom box and place it in the top brood box. Replace the feeder frame with two new frames in the bottom box, one each at the far sides of the bottom box's frames.

Brush your bees off the edges of the bottom brood box and place the second brood box directly on top. Ensure that there are no openings from the outside between these two boxes.

Pictures

Adult Honey Bees

Queen

The queen is the long bee in the center.



Drone

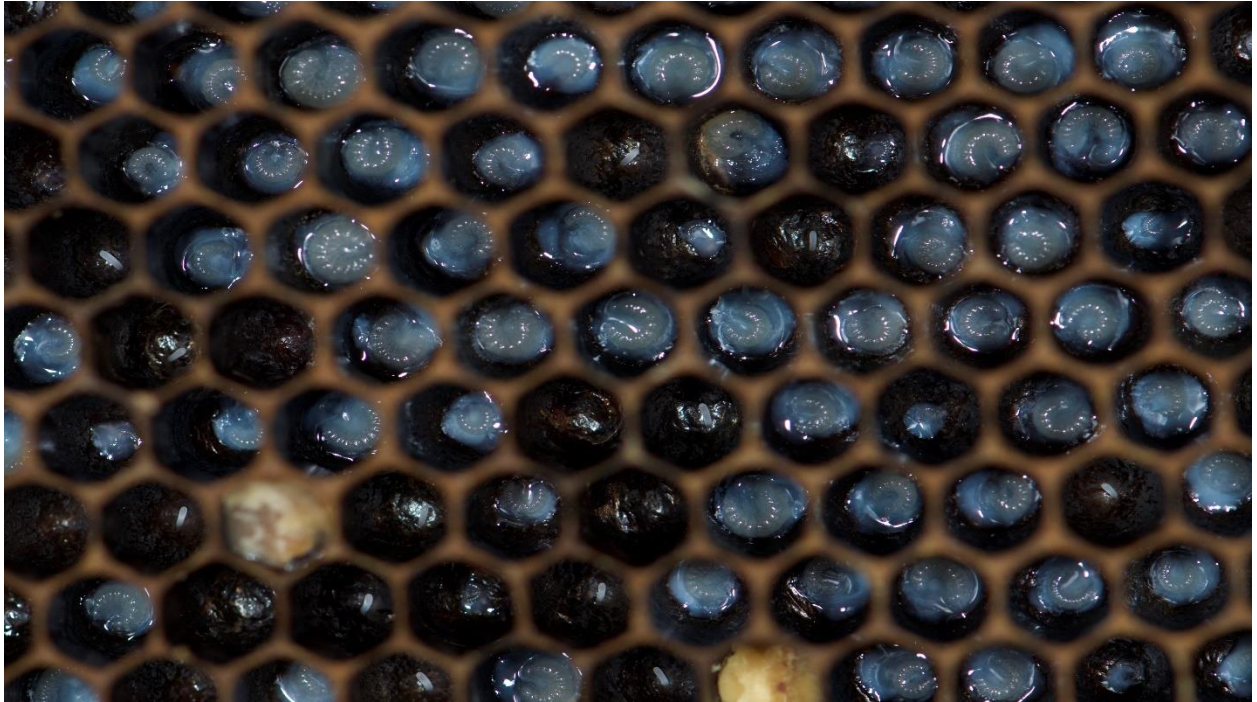


Worker



Brood

Open Brood



Closed Brood

This worker bee has two varroa mites on her thorax. She is on top of closed brood.



Queen Cells



Hive Resources

Honey



Nectar



Beebread



Hive Pests

Varroa Mites



Small Hive Beetles

