

The Bee Line



Newsletter of the Maine State Beekeepers Association | mainebeekeepers.org

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Spring Management April/May

by Jennifer Lund

It's starting to feel a lot more like Spring!! Bulbs are blooming, birds are chirping, tree buds are swelling, and spring peepers are peeping. It is an exciting time to be a beekeeper.

Brood production in honey bee hives starts to ramp up in April. A few pollen and nectar sources will start blooming, but poor weather may hinder the ability of foragers to access them. It is not uncommon for a hive to make it through the hardest part of winter only to starve in March or April, so it is very important to continue monitoring food reserves in your overwintered hives. You can feed frames of honey to populous hives that were saved from the previous year or from dead hives, provided they are free of American foulbrood and other disease. Individual frames of honey should be positioned on either side of the cluster, whereas a hive body or super filled with honey is stacked above the cluster. If you do not have left over honey frames you can feed sugar syrup inside the hive. Front hive feeders or other outside feeding methods do not work well because syrup can freeze overnight or become too cold for the bees to use properly. Hives without adequate stores will start aborting brood, or worse, show symptoms of European Foulbrood (EFB). Symptoms of EFB: Irregular brood pattern with yellowish to brown dead and dying larva. The larvae appear to melt or

deflate and have a granular or watery consistency that does not "rope out". As the dead larva dries out, it forms a scale that is brown, rubbery and easy to remove from the bottom of the cell. The hive can have a sourish-dead fish smell.

On warm days (above 50 degrees F) beekeepers should scrape bottom boards and briefly lift frames to check the brood patterns. A quick check of the brood pattern at this time will give an indication of the queen's performance and colony condition. All stages of brood should be present and uniform in appearance. Symptoms of queen failure include: drone brood in worker cells, spotty pattern, or the absence of brood. If weather permits, sample wintered colonies for Varroa mites using alcohol rolls and if Varroa are detected above threshold, apply mite treatments.

Packages begin to arrive from the southeastern United States during April and nucs are usually available in May/June. If you have new bees arriving, make sure your new equipment is cleaned, set up and ready before your bees arrive. It is not uncommon to install newly arrived packages between rain or snow storms so having everything prepared ahead of time is important. In early April you should also make sure you install bear fences if your apiaries are in areas with high bear activity. Black bears emerge from their hibernation hungry and your bees are the perfect high calorie snack for them if not protected.

By May, brood rearing is in full force and populations inside the hive will build up quickly. Most of your time this month will be spent managing for population buildup and swarm prevention. If the queen is still in the

top hive body and the bottom hive body is empty, reverse the hive bodies to encourage population buildup. Check the brood pattern to evaluate queen performance, inspect for symptoms of brood disease, and check for developing queen cells. Re-queen any hives with failing or poor performing queens and divide/split colonies that are strong. Temperatures can still dip into the 30s at night so be careful not to break up the brood cluster and make sure their splits have plenty of bees to keep developing queens and brood warm. Keep the entrance reducers in place until late May or early June, after the nighttime temperatures moderate.



Hive inspection.

As in most areas of the country/world, Varroa mites continue to be the biggest challenge for beekeepers in Maine. It was the number one reported cause of loss by beekeepers during two of the past three beekeeping seasons. Approximately two thirds of beekeepers in Maine report monitoring for Varroa and usually the first alcohol rolls of the season are performed in May. Over the past three years, those that monitor using alcohol rolls report lower

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Upcoming Board Meetings: April 16 & May 21 (7-9pm)*

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*Open to all MSBA members for discussion with voting to be done by current BOD members only. Meetings generally held at the Viles Arboretum, 153 Hospital Street, Augusta or via conference call. Please contact a board member for details.



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Spring Management ...continued from page 1

losses than those that do not monitor (28%-39% vs 45%-60%) and those that are treating for Varroa report fewer hive losses than those that do not (40%-44% vs 76%-78%).¹ Sample your colonies for Varroa mites using an alcohol roll and if Varroa are detected above threshold, apply mite treatments.²

If you installed new colonies in April, inspect for overall health and queen condition. Manipulate frames if necessary (move undrawn frames from the outside walls of the hive closer to the center of the hive) to aid in comb construction. Continue feeding packages and nucs until they have drawn out eight or more frames in their brood chambers and have begun to store honey and bee bread.



Inspecting a frame. Photo by rickpilot_2000 on Flickr

To learn more about early season management, join Jennifer on March 26th for the MSBA webinar pertaining to the 2020 spring edition of hive management. Learn what to do with dead out hives, how to start new hives and what to look for during your first overwintered hive inspections.

References

1. <https://www.maine.gov/dacf/php/apiary/> for Maine's management survey results from the past three seasons.
2. For more information on Varroa management in the Northeast check out the four part webinar series: <https://www.northeastipm.org/ipm-in-action/the-ipm-toolbox/>

Spring is on the Way

by Sheri Zimmerman

The Kennebec Beekeepers Association's February meeting featured Master Beekeeper Rick Cooper who discussed spring management of hives. Rick has almost 40 years of beekeeping knowledge that he is happy to pass along. He has developed a "bee calendar" which reflects specific days to complete certain tasks relevant to that particular season. This is useful information to have and easy to remember. For example, he recommended that on Valentines Day you should check to make sure the bees had either sugar or honey supplies to get them through the Ides of March, when you may be able to open the inner cover to peek inside. He also stressed that March into April is when we lose the largest number of hives from starvation. Rick will add pollen powder mixed into sugar which he places on the top cover or as a pollen patty, but warned of the increase this causes in brood production and swarm behaviors.

We had a great turnout to hear from a Master Beekeeper who we will definitely invite to speak again!

The club is also very excited about our new Kennebec County 4-H Beekeeper Scholarship. The scholarship is intended to:

- encourage young people who have a desire to understand the natural world we live in, including beekeeping and the fascinating lives of honey bees
- promote responsible beekeeping and pass this knowledge on to the next generation
- provide the necessary tools and equipment needed to work safely with the hives we maintain at Viles Arboretum

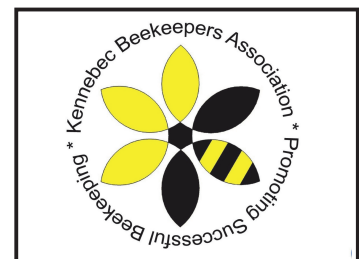
The recipient/s will attend our Beginner Beekeeping Class and care for the hives at

Viles with his/her mentor. During the summer they will participate in Open Hive Days. When it's time for honey harvesting they will be part of the process, learning how to collect frames, uncap the cells and extract the honey.

Our goal is to engage more young people to learn about and work with honey bees and to share their knowledge with others.

The 2020 Scholarship winner is 15 yr old Jeremy from Albion.

KBA is celebrating the club's 10th anniversary in April. The club has grown from its humble beginnings to a well established group of dedicated beekeepers who are eager to educate and inform the public about honey bees. Our various club commitments include the LiveStock Expo, Fort Halifax Day, Bug-mania, Windsor Fair and more. We also offer a Beginner Bee Class in February and March. Our club is very fortunate to have newbees as well as seasoned beekeepers who are always willing to answer questions and lend a hand when needed.



The April meeting is going to be a rocking good time with food, drinks, and a special giveaway. Kennebec Beekeepers Association monthly meetings are held the second Thursday of the month at Viles Arboretum, 153 Hospital Street in Augusta from 6:30 to 8:30 pm. Our meetings are open to the public and everyone is welcome to attend!

Please visit our facebook page, Kennebec Beekeepers Association, for more information.

Breeding for Desirable Traits in Honey Bees

by Jason Peters

As someone who had experienced queen failures in my first season of beekeeping, the value of a good queen became very obvious to me. Soon after my first year of unsuccessfully keeping bees, I attended a presentation about queen rearing at my local club (Penobscot County Beekeepers Association) that featured David Ellis. David was a local queen breeder who worked for the late Harold Swan and later went on to have his own successful commercial operation. This presentation, which was packed with great information, left me with more questions than answers so I decided to contact David to see if he would be willing to teach me some of the processes involved with rearing your own queens. From that moment on, I developed a strong interest for queen rearing and have since formed a great friendship with him. My newfound passion led me toward wanting to learn how to produce queens that exhibited some of the specific behaviors that I was after. While working under David's direction, I found that his dedication to produce locally adapted, calm, winter hardy and disease resistant queens made a strong impression on me. My experience working with him gave me a valuable perspective on large-scale queen production and the value of having good queens in your operation. One of the first lessons I learned was that the methods and procedures used to raise queens contributed greatly to the quality of the queens being produced and in order to achieve the highest quality, one must focus on developing a program where selection for desirable traits is taking place. Today in our operation we focus on traits based on breeding values and follow many of the methods and systems developed by Brother Adam of Buckfast Abbey.

One of the most important traits being that of disease resistance in our stock and the reality that, in many cases, we can select for it. Although selection for specific traits can be a laborious and expensive process, we are starting to see some advances in technology such as Marker Assisted Selection (MAS) that simplifies testing and provides more advanced opportunities for queen breeders. As a beekeeper, I know that there are some basic qualities that I desire in all of my bee stock. I have little tolerance for the presence of diseases such as Chalkbrood or Sacbrood and I want bees that exhibit a calm demeanor. Calm bees are far more pleasant for the beekeeper to manage and make all beekeeping tasks more enjoyable.



*A great laying pattern.
Photo courtesy of Jason Peters*

Since our breeding program increases many good economic traits such as queen longevity, low swarming tendency, honey production and spring build-up, we evaluate each colony based on overall performance throughout the season and assign breeding values based on priority.

One of the first characteristics that we select for is overwintering ability. This has a few components but the main factors that we look for are a colonies' ability to maintain a population of healthy bees while consuming a low amount of resources over the winter months. To measure the values

of this we rely heavily on weighing our hives to determine consumption rates which provides us with an average cost associated with feeding colonies that overwinter. Since we overwinter our bees in a variety of configurations from small four frame nucs to large full size hives, we are able to evaluate their performance and choose from those that do the best in each category.

Another characteristic that we select for in our breeding program is gentleness. As much as I love beekeeping, I really don't appreciate aggressive bees and I still have not developed a passion for getting stung. We follow a few testing protocols to select for good temperament and low defensive behavior in our apiaries. A colony that stings for no reason is noted in our records. Notes are kept on each potential breeder colony and information is logged almost every time a hive is opened. If the colony stings again on subsequent visits, this is recorded and that queen is then replaced. A colony with aggressive or defensive tendencies is never kept in our yards and she would never be considered as a breeder queen, regardless of that colony's performance or other traits.

Since our operation is comprised of mostly single brood chamber hives, we also look for what we call "efficiency". We score individual colonies based on how efficiently they utilize space in the brood chamber. When selecting for this, I like to see a little honey in the two outer frames but very little to no honey on the other frames that constitute the brood nest. I want to see some pollen in the brood frames packed around the edges, but none interspersed amongst the brood cells. I also must see a solid brood pattern in order for a colony to be added to the list for both efficiency and disease resistance.

Hygienic behavior is also something very important to us. This behavior and its benefits have been well documented and are essential to our operation. When testing for this, we evaluate potential breeder

queens each spring and test pre-selected stock for hygienic traits. To measure this behavior, we utilize the brood freeze kill assay. This allows us to quantify this behavior and keep detailed records about each potential breeder queen colony. The records are kept to provide information about the expression levels of these traits so that we can select from those colonies that are performing best over time. After these evaluations, I pick my top hygienic colonies to be part of my breeding program for the following season. We then test subsequent generations of queens (sister groups) to determine the heritability of these traits in our lines.



*A cell builder colony.
Photo courtesy of Jason Peters*

While we are constantly working on increasing the stability of specific traits in our lines, we frequently bring in new stock from other queen breeders for testing and evaluations. We work with others here in Maine and in other areas to share ideas and stock which allows us to have a good supply of queens for testing and to see if they will fit into our existing program without compromising the work that we have done.

Over the last few years, we have contracted with a few queen breeders for artificial insemination services which gives us the ability to maintain a relative level of purity in our lines and prevents the dilution of specific behaviors that would potentially be occurring when open mating queens.



*An inseminated Buckfast breeder queen.
Photo courtesy of Jason Peters*

Another component to our breeding program is maintaining healthy drone mother colonies that share the desirable traits and characteristics that we look for in our bees. These are placed in various locations surrounding our breeding yards to increase the likelihood that our queens are mating with the desired drones in our local drone congregation areas (DCA). Some of the behaviors that we are currently working on are focused around mite-resistance. We are working with a few queen breeders and research groups both here and abroad to incorporate these

behaviors into our existing lines. Since we tend to only apply Varroa treatments in the fall, we are hoping that by adding and increasing the levels of expression of specific traits such as grooming behaviors, suppression of mite reproduction (SMR) and Varroa sensitive hygiene (VSH), that we should be able to increase the amount of time between treatment applications and help reduce our overall dependency on them in the future.

Some things that all beekeepers can be doing to increase the good genetics in their apiary is selecting for desirable traits within their own colonies and producing their own queens or by requeening with stock from reputable queen breeders. For example, if you have colonies of bees that are overly defensive or have a strong propensity for swarming, you may wish to requeen those colonies. That will make your inspections much more enjoyable, your colonies more productive and will contribute to the overall good genetics in your area making you a good “bee neighbor”.



A graft frame. Photo courtesy of Jason Peters

Join us on March 26th for the
2020 Spring Edition of Hive Management.

If you miss the live webinar, you can view it at a later, more convenient time. Watch for an email with the link to access the recorded webinar.



How to Sweeten Your Compost and Manure Piles To Benefit You and Your Bees

by Mike McNally

The ideal mushroom for compost piles should be edible by the beekeeper, have mycelium to benefit the bees, propagate easily and grow aggressively. Mycelium is that part of the mushroom that grows into and under the organic material of the compost pile. The bees feed off the excretions of the mycelium called guttations. These guttations contain numerous organic compounds and of particular interest to the bees, are fungal sugars. Left to their own devices compost piles can grow a variety of fungi. Some good, some bad and some downright ugly. I know, it sounds like a cheap "Spaghetti Western," but it is true. Two years ago I took a picture on the edge of my compost pile and captured in one frame what appeared to be three puffball mushrooms, usually considered good to eat. One turned out to be an immature *Amanita* species (poisonous), another a pigskin puffball (poisonous) and the last a gem studded puffball (edible). They all looked similar.

The above points to an important consideration. If you are going to consume wild mushrooms you absolutely must know what is safe to eat and what is not. There is a saying amongst mycophiles "when in doubt, throw it out." Don't worry, your bees will know the difference. However, what grows in your compost pile can be greatly influenced by you. There are thousands of different mushroom species but not all can thrive in this particular environment. Those that live on dead organic matter are called saprophytes, those living on live trees and plants are parasitic and those in a symbiotic relationship with plants are mycorrhizal mushrooms. I recommend people start with a saprophyte mushroom, *Pleurotus ostreatus* (oyster mushroom). It meets the above criteria: easy to grow, good to eat, and can grow on almost any plant fiber from logs to plant waste such as straw.

Chances are your compost pile has already started growing mycelium from other mushrooms but with fungi you are playing a numbers game. If you can overwhelm what is already there you have won. This can be done by adding grain or sawdust spawn purchased from commercial growers. Simply google "commercial mushroom spawn suppliers." Pick one close to home since those will typically grow the best in your area. I usually do business with North Spore located in Westbrook, Maine. They have online videos that will show you how to start a mushroom bed. Most growers however can and will ship almost anywhere in the country. Outside the country may be an issue since some countries will not allow the importation of fungal spawn that is not native. Once you receive your spawn simply break it up and mix it into your compost pile.

If you are a "do it yourselfer" the oyster mushroom is for you. Grow your own spawn and inoculate your compost pile with spawn you have grown at home. This in my opinion is a lot of fun, particularly if you have kids at home. Start by buying a small amount of oyster mushrooms from your local grocery store. Mince these mushrooms into small pieces. Believe it or not these small pieces have the ability to clone themselves. Next cut up clean cardboard that will fit in a small plastic container with a lid. With the lid removed and the cardboard inside the container pour boiling water over the cardboard. I recommend you do this in your sink. Let it cool, then squeeze out excess moisture from the cardboard. The hot water will cause the cardboard to delaminate. Put the wet laminates back into the plastic container with a small amount of the minced mushroom between each laminate in a sandwich fashion and cover with the plastic top. Place this prepared container in a dark warm place for a couple of weeks.



Photo courtesy of Mike McNally

When you remove the plastic container in two weeks you will notice that all the cardboard pieces are covered with snow white oyster mushroom mycelium. Don't add this to your compost pile, at least not yet. There is more fun to be had. Most of us are coffee drinkers. Save your empty coffee cans and to this add your spent coffee grounds with filter paper after you squeeze out the excess moisture. Add a piece of your cardboard laminate daily with the spent grounds. When the can is full, place the plastic coffee lid back on the coffee can. If you want to speed up the process drill a $\frac{5}{8}$ " hole in the can cover and plug with polyfill. This is not absolutely necessary but it seems to make it work better. Place the can in a dark warm area for two months. You are now ready to inoculate your compost pile or upon removing the coffee can lid, place a piece of plastic wrap on the top of the can using a rubber band to hold it in place. Poke three to four holes in the plastic and spritz the top daily with water. Usually this will give you a nice flush of oyster mushrooms worth more than the coffee that was originally in the can.



Photo courtesy of Mike McNally

After harvesting and eating your mushrooms you can use the remaining inoculated coffee grounds to inoculate your compost pile. For those who have no compost pile then I recommend the

following: Wine cap mushrooms (*Stropharia rugosoannulata*), a/k/a, garden giant. Find a relatively shaded area. Scarify the ground with a rake. Shake out a couple of bags of spawn on the prepared area. Cover with a cubic yard of coarse hardwood chips, water and you are done. Mushrooms will appear in 6-12 months. I have put in seven to eight beds in the last few years and none have failed. To keep it going just add fresh wood chips each year. To start another bed just scoop up a bucket of inoculated chips and move to a new location. These mushrooms are very aggressive and delicious to eat. Don't be disappointed if bees do not visit your patch especially if flowers are plentiful, but smile when you see that they do. Bon Appetit!

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Ask A Master Beekeeper...

Swarm season will soon be upon us. I currently have three hives and don't really want more hives. What are some strategies that I can use to best manage my existing hives?

My very best advice to the hobby beekeeper for spring swarm management is to make sure you equalize all of your hives. Take frames of capped brood from strong colonies and add them to weaker ones. Make sure you do not move your queen by shaking the bees off the frame. You can do this several times until late May and it should help. *Rick Cooper*

Sometimes it helps to think of swarm season as colony reproduction time, both in terms of actual swarms issued and the drones that are produced about the same time. Beekeepers can try to prevent the reproduction from happening or intervene to keep it from succeeding. Some, if their location allows...oh, don't worry about it; what happens, happens.

Details on how each approach works are in countless books and internet videos. My favorite book on the subject is *Swarming: Its Control and Prevention* by L.E. Snelgrove. I also like a pamphlet by Wally Shaw (a Welsh beekeeper) called "There are queen cells in my hive – What should I do?" Both are available from Amazon.

Swarming is something to think about way before swarm season; be that you're installing a queen from a line known to be less inclined to swarm or that you're planning to make up nucs to sell to other

beekeepers. Plans need to be established. You don't want to simply react when you discover a row of capped queen cells on the bottom of your frame! *Andrew Dewey*

As a new beekeeper, I will have overwintered my first hives successfully this spring. I am confused about whether I should feed sugar syrup or not especially if they have some frames of capped honey left.

It is a choice only you can make. Remember that in mid and late April brood rearing is in full swing and even hives seemingly heavy with honey can become very hungry if a week of rain comes. Brood production takes a lot of food. *Rick Cooper*

Congratulations on successful overwintering! And congratulations also on looking in your hive and seeing that your bees still have capped honey! In general, my philosophy on feeding bees is that I have a responsibility as a beekeeper to make sure my bees don't starve. Practically, this means that I want to see honey at all times in the colony, in an amount increasing from spring until winter, and enough for them to consume if there is either nothing for the bees to forage on, or if weather conditions don't allow them to go and get pollen or nectar.

Feeding by the calendar can lead to waste. While you don't say just how much capped honey is left, you do say frames, plural, so there probably isn't a need to feed more right now. The bees will soon be increasing their food consumption, especially as their population grows, so keep an eye on it. Pollen, a/k/a bee bread, is another matter, and something for another conversation. *Andrew Dewey*

When should you do your first hive inspection after the winter and during the inspection, how do you know if you have to feed the bees?

Well done getting the bees through winter! This is a very location specific question, as

temperatures vary so wildly around the state. I check for stores starting in February, but wait to do a full all-frames removal inspection for a sunny, windless day, often in May (for my location in Washington County) when temperatures reach 60°F.

I check for stores in two ways: one is by lifting the hive, using experience to guess if the hive needs food or not, and the second is by removing the outer and inner covers, and seeing where the cluster is. If the bees read the books they were supposed to and started out in the lower box, they ought to only be up at the tippy top if they need more food! I have a rim for such emergency feeding in place as part of my wintering setup, so it is easy for me to give them a winter patty (different from a pollen patty), should they need it. *Andrew Dewey*

I have lost my hives two years in a row. I do alcohol washes and use miticides. I don't want to simply buy more bees to only lose them again. I'm not sure what I am doing wrong. Can you suggest some approaches to take that may result in better winter survival?

If you are losing bees every winter think about your location and ask the state bee inspector or an experienced beekeeper to look over the location. Check your hives to make sure they are queen right after you have removed your fall medications. Change the race of bees you are starting into winter with a race which is more winter hardy. Make sure the top hive body is full of food in October and place supplemental food in the hive in the form of sugar or bee candy. *Rick Cooper*

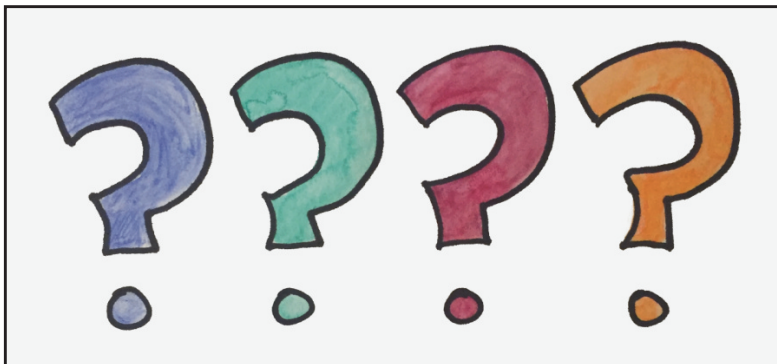
No one likes having bees die, especially when you did everything you knew to do correctly. Pat yourself on the back for doing those alcohol washes. The priority is discovering why the bees died. There are unfortunately lots of reasons a colony doesn't make it, and it is important to figure out what went wrong. There are resources available for doing hive autopsies. The Maine State Apiarist wrote one! This may

be a time for you to have a more experienced beekeeper from your club go through the hive with you. They may see things you don't yet recognize. But don't let them do all the work; they were your bees. Once you know what happened, you can take steps to keep it from happening in the future. And do stick with it! *Andrew Dewey*

Losing a hive is so disheartening. The most important thing you can do is find out why the hive did not survive. Have a more experienced beekeeper go through the dead out with you frame by frame. An experienced beekeeper can often find clues as to why the hive wasn't able to make it. Do you belong to a local club? Can they help you find a mentor to observe you as you prepare your hives for winter and check them over the winter? Great that you are doing alcohol washes! Do you repeat them after treatments to assure your miticide is doing the job? Attend club meetings and interact with other beekeepers; you can learn a lot from other's experiences, too!

Carol Cottrill

Ask A Master Beekeeper is a new feature that will be found in the newsletter. Your questions are NEEDED! Please email any questions you have for our Master Beekeepers to rmlamas1@gmail.com.



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Doolittle Nucs

by Jane Dunstan

During intermediate bee school this year, I shared a new way to make nucs after reading the article "*But Won't They Fly Back? Making Nucs Within a Single Apiary*" by Zachary Lamas. The article appeared in the April 2018 edition of *The American Bee Journal*. This method is attributed to Gilbert M. Doolittle, a 19th Century beekeeper better known for his queen rearing philosophy.

While never having made nucs this way, I found myself intrigued with the process which is extremely easy and does not require you to locate the queen. For some, finding the queen in a mass of bees in a very busy and voluminous hive can be a daunting task. This method removes the concern of finding the queen as well as addresses the question of how many bees should there ultimately be in the newly created nuc?

Before getting to the how to, let's look at the nature of nurse bees who play a pivotal role in the creation of Doolittle nucs. Young nurse bees have no other desire or task to perform except to take care of that brood. It matters not what type of bees, what type of foundation, whether it's an eight frame or ten frame box, deep or medium hive body. Nurse bees will search for eggs, larva and young brood to care for. They will cluster around the larvae to feed and maintain the correct temperature for optimal brood rearing. You will never see open frames of brood of any age unattended by nurse bees. As a result of this undying devotion to caring for the brood, nurse bees will be unaffected when removed from their parent colony and relocated elsewhere. They simply have their brood to care for and they are tickled pink.

Supplies needed:

- queen excluder
- nuc box with bottom board
- inner cover
- telescoping cover
- a short board to cover about one half of the parent colony.

•Select frames for your nuc. For a five frame nuc, choose one frame of honey, one frame of pollen, two frames of brood covering all stages and one frame of mostly open comb which may have a small amount of pollen, honey and/or brood.

•Once you have selected those five frames, brush or shake ALL those bees back into the parent colony.

•Place a queen excluder on top of the parent colony.

•Now take the nuc you have created with those five frames and place it above the parent colony ON TOP of the queen excluder (see schematic below).

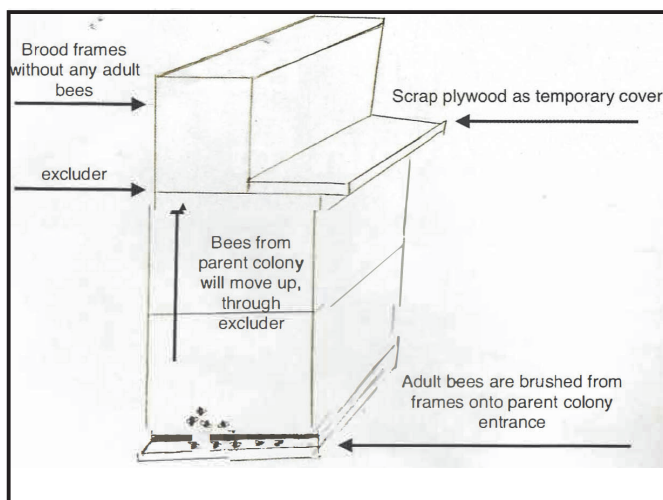
•Cover the nuc with an inner cover followed by a telescoping cover. Is this perfect or what! All those nurse bees will move up into the nuc box to tend to the open brood that is present. You will not have to worry about having too many or too few nurse bees. The perfect number will cover those frames and take the guess work out of that step. With the queen excluder under the nuc, you can rest assured the queen is in the bottom box.

•You will now place the short board on top of the queen excluder over any exposed frames above the parent colony next to the nuc colony.

•The recommended time frame before removing the box from atop the parent colony is anywhere from six to 24 hours. You have that flexibility in the event of your work schedule or other commitments. The reality is that the bees that need to be in that nuc box are already there so all you have to do is remove it when you are ready.

•Remove the nuc box and all bees and place it on its own bottom board with inner cover and telescoping cover. The nuc can be as close to or as far away from the parent colony as space allows.

At this time, you will either introduce a new queen to your nuc or allow the young colony to create its own queen. Monitor for queen performance and hive build up, especially if you have allowed the nuc to raise its own queen. Success in allowing bees to raise their own queen depends on the time of year, nectar flow and drone availability. Feed your new young colony with 1:1 sugar syrup. There will be few, if any, field bees in your nuc given the number of nurse bees covering frames, however soon the nurse bees will take on foraging roles. Reduce entrances to prevent robbing.



Reprinted with permission from: "*But Won't They Fly Back? Making Nucs Within a Single Apiary*" by Zachary Lamas. *American Bee Journal*, April 2018, pgs 395-398

There are considerations to be made in whatever split you are contemplating making. Your parent hive needs to be strong before splitting, spilling over with healthy bees. It is far from wise to split a hive that is weak. Weak colonies beget weak colonies-not what you are striving for.

It is advisable that you have bees covering AT LEAST six frames if not more, before that colony is

ready to split. There should be numerous frames of capped brood, eggs and larvae all of different ages and stages of



Eight frame hive with Doolittle Nuc with queen excluder. Photo courtesy of Michael Donihue

development. The parent colony should have ample honey and pollen frames available to not only pull from to create a nuc, but also remaining in the parent colony. A WOW factor should be present as you consider your hives for splitting.

Weather and available forage are also important considerations. It is advisable to split when the weather has warmed and is expected to stay warm and there are nectar and pollen sources in full complement for the bees. In the midcoast area, dandelion bloom occurs late April or the first of May which is often when warm weather and forage sources become more predictable.

Making splits or nucs is great fun! It is a perfect opportunity to expand your apiary as well as provide a brood break as a strategy for Varroa mite control. Whatever the reason, try the Doolittle method!

Reference:

Lamas, Zachary. "But Won't They Fly Back? Making Nucs Within a Single Apiary". *American Bee Journal*. April 2018. pgs 395-398.



A message from the Eastern Apicultural Society regarding the 2020 Short Course and Conference

Due to the recent situation involving COVID-19, EAS has decided to put registration on hold for this summer's conference at the University of Maine in Orono, August 3-7, 2020, until further notice. Information about registration and the conference will be posted on the EAS website as it becomes available. Please inquire with airlines and hotels about cancellation policies before making any reservations. Thank you.

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Remember to register your apiaries by June 15th!

It is a requirement under the Title 7 MSRA, section 2701 to register your apiary with the Maine Department of Agriculture, Conservation and Forestry (DACF).



Registration is valid for a twelve-month period expiring in mid-June. If you previously registered your apiaries, you will receive a renewal form by mail. If you have not previously registered your hives, forms can be downloaded from the DACF apiary website (<http://www.maine.gov/dacf/php/apiary/index.shtml>).

Besides being the law, it is important for beekeepers to register their apiaries with the State of Maine for several reasons.

Disease Management: American Foulbrood is extremely long-lived and contagious. It can rapidly spread from hive to hive. If a positive case is found in the state, all the surrounding registered beekeepers are notified. A notification alerts a beekeeper to be extra vigilant about checking their hives for signs of the disease and allows them to request an inspection by a trained inspector. If your apiary is not registered, you will not be contacted.

Pesticide Applications: There are rare occasions when pesticides must be applied aerially to control mosquitoes or other public health pests. The Maine State plan for public health emergencies includes consideration for pollinators and contains language that directs the applicator to contact beekeepers in the area so they can take the proper precautions to protect hives.

If you are not registered, you may not be contacted.

Inspections: If your hives are registered with the DACF you can request an inspection of your apiary by a trained apiary inspector.

Outreach and Education: Registered beekeepers who provide their email address will be included on important updates regarding pests/diseases and educational opportunities.



Fill Out the 2019/2020 Maine Beekeeper Survey!!!

The annual Maine beekeeper survey of losses and management practices is now live and ready for your input! Gathering this type of data is important for seeing trends, recognizing when and how losses occur, and determining where to focus education/outreach activities in the future. A summary report of the survey will be presented at the Maine State Beekeepers annual meeting in October and available online. A link to the survey can be found at the top of the DACF apiary website (<http://www.maine.gov/dacf/php/apiary/index.shtml>).

Spring Time Tips...



- Do alcohol washes to assess mite levels in your hive on a monthly basis beginning in May. If above the threshold: TREAT.
- Wait for warm temperatures that are consistent and for foraging opportunities to be well established before splitting your colonies.
- If the queen is questionable in regard to her performance, replace her.
- Be diligent in checking for hive congestion, whether it be a result of too much brood, too much nectar, or too much pollen in the cells. When congestion occurs, bees start thinking it's time to look elsewhere or will supercede their existing queen.
- Monitor, monitor, monitor....colonies get away from us very easily if we are not consistent with our inspections.
- We have new beekeepers in our clubs. Invite them over to work alongside you...hands on experience is invaluable.

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Keeping Time...

by Michael Donihue

Recently, I've had the opportunity to think about Governor Mills' proclamation setting a goal for carbon neutrality for Maine by 2045. We can certainly debate the scientific, economic and political implications behind a goal of carbon neutrality for the state, but I'd prefer to consider this target as an opportunity for us to think about the carbon choices we make in our daily lives and in our plans for the future.

So you're probably wondering what this has to do with beekeeping and the *Apis mellifera* we dutifully care for despite the challenges of mites, disease, bad weather and well intentioned beekeeping practices that turn out to be mistakes. Well, I think that I have an idea for how our honey bees can help the Governor achieve her goal.

First a couple of words about carbon and why we should care about it. Carbon dioxide is a natural part of our environment. We exhale CO₂ every time we breathe. We also release CO₂ when we burn fossil fuels, solid waste or wood products. In addition, CO₂ is naturally emitted by rotting and decaying material. CO₂ is known as a 'greenhouse' gas because it persists in the atmosphere surrounding the earth, trapping heat and raising temperatures on our planet just like in a greenhouse. Sunlight passes through our atmosphere but the earth can't radiate the sun's heat back into space very well when it's enveloped in greenhouse gasses. Higher global temperatures in our oceans and land surfaces contribute to climate disruptions like fires, hurricanes, and unpredictable weather. CO₂ remains in the atmosphere longer than any of the other greenhouse gases, typically hundreds of years. The good news is that forests and oceans help remove CO₂ from the

atmosphere. The fact that Maine is the most forested state in the country, with more than 89% of our land area covered by trees, is a key component to Governor Mills' goal of achieving carbon neutrality by 2045.

All plants depend on energy from the sun to grow. They use photosynthesis to take in carbon dioxide and water and use these to build carbohydrate molecules as they grow. Plants give off oxygen as a waste product from this process; basically 'breathing' the way we do, but in reverse. The carbon from CO₂ taken in by a forest is stored in the leaves, trunks, branches and roots of the trees. Soil made up from composted fallen leaves and branches is also a significant carbon 'sink.' Manufactured wood products like 2x4s are another way that carbon can be stored, or sequestered, for a period of time.

Estimates vary, and exactly how you count the amount of carbon offset by Maine forests is a matter of scientific and political debate. According to a recent report from Maine's Department of Environmental Protection, however, about 75% of the total carbon emissions in the state are offset by the carbon absorbed and sequestered by Maine's forests. This fact makes Governor Mills' goal of carbon neutrality seem reachable. The Maine Climate Council is currently considering proposals to help the state reach the point where reduced carbon emissions are completely offset by increased carbon sequestration. I've got an idea how Maine's beekeepers, and the apiaries we manage, can claim some credit in this effort.

Honey bees gather nectar and pollen produced by grasses, flowers, fruiting plants and trees. Nectar and pollen are a byproduct of photosynthesis by plants and are full of carbohydrates. Honey is roughly 83% sugar (mostly fructose, glucose, maltose, and sucrose). I have a friend who is an organic chemist and it turns out that these sugars are about 40% carbon by mass. Therefore, by my calculations a pound of honey contains a little more than

30% (83% x 40%) carbon. This means that a gallon of honey contains about four pounds of carbon. We harvested 15 gallons of honey last year here in our Central Maine apiary which amounts to 60 pounds of carbon. Commercial beekeepers tally their harvest in terms of 55 gallon drums – that's almost 200 pounds of carbon per drum.

Now in order to count as a true emissions offset, carbon must be sequestered for a long period of time. Here's the good news. Honey may be even better than forests at sequestering carbon. I remember reading an article in National Geographic magazine about researchers who found a pot of honey in an Egyptian tomb that was 3,000 years old and still perfectly edible. Even if eaten, as long as my waste stays in our septic tank or is sequestered state-wide in the ground like other organic compostables it should count in Maine's carbon offset calculations.

At the commercial level, Maine reportedly harvested 396,000 pounds of honey in 2017 which amounts to roughly 54 metric tons of CO₂. I'm hoping that we can report to Governor Mills that we beekeepers are doing our part to help her achieve her goal of a carbon neutral Maine by 2045.

Resources:

For more information on greenhouse gases see the U.S. EPA report at

<https://www.epa.gov/climate-indicators/greenhouse-gases>

To follow the activities of the Maine Climate Council visit

<https://www.maine.gov/future/initiatives/climate/climate-council>

The National Geographic article referenced above can be found at

<https://www.nationalgeographic.com.au/history/honey-in-the-pyramids.aspx>

And for a good lesson on how carbon is stored in trees and wood products see

<https://forestlearning.edu.au/images/resources/How%20carbon%20is%20stored%20in%20trees%20and%20wood%20products.pdf>

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