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# The Bee Line

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## Small Hive Beetles (SHB)

by Jerry Hayes

One of the challenges in being a beekeeper with decades of KSAs—Knowledge, Skills and Abilities (or simply old)—is that we have lots of confirmed data and lots of real-life experiences. Here is some information that hopefully makes sense in your contemporary journey with SHB.

Insecta: Coleoptera (beetle) family: Nitidulidae (sap) Aethina tumida i.e., the small hive beetle. The SHB is a native of sub-Saharan Africa. The Nitidulids (or sap beetles) such as the familiar picnic beetle—feed on plant fluids/saps, fermenting fruits, fungi etc., but SHB also need high protein diets when they are trying to reproduce. They scavenge on feral African bee colonies, which are a tropical/sub-tropical insect that don't have to stay in one location, always preparing for the next winter, unlike our European honey bees have had to do for the last 400 years to genetically adapt to living through long, cold, hard northern European winters. African honey bees can 'abscond' i.e. the whole colony leaves a hive location to escape predators and pathogens in the comb, or look for more flower resources. Absconding is not 'reproductive' swarming where part of the colony leaves to spread its genetics around in a new area and the other part of the colony stays behind in the original hive location. African honey bees can abscond dozens of times per year because survival is not totally dependent on honey stores.

SHB have made some amazing adaptations to take advantage of feral honey bee colonies in Africa that have of course been transferred to the US. While African honey bees abscond due to constant predation from humans, honey badgers or other pests, SHB can continue to reproduce for a while on the abandoned comb. SHB can also force the issue, because they can produce a similar queen-like pheromone that can cause the queen to slow egg production. As the colony population drops to the point that the bees can no longer protect their colony, the SHB move in and become active predators, resulting in the African bee colony absconding.

The first reported sighting of SHB in North America happened in 1996 when a beekeeper in South Carolina noticed several small black beetles in a colony established from a recent swarm. The beekeeper collected samples of these beetles which he had never seen before and sent them to Clemson University. An insect taxonomist tried to ID them but did not have enough of the 'keys' needed to identify the genus or species. In 1998 an apiary in Florida was destroyed by beetles that were properly ID'd as SHB. The adult SHB collected two years earlier in South Carolina were then ID'd as Aethina tumida,

*Photo courtesy of Jerry Hayes*

How SHB were introduced into the US is still unknown but global travel and trade has resulted in items being moved around and shared regularly.

Having been the Chief of the Apiary Section for the Florida Dept. of Agriculture and Consumer Services in the ealy 2000s I heard lots of early SHB stories from my predecessor, Mr. Laurence Cutts. Mr. Cutts told me that since SHB were native to Africa, he invited a group of South African commercial beekeepers to come to Florida to see what challenges Florida beekeepers were having and ask for their advice. A small group came and toured the state looking at management techniques, SHB impact and assessing the situation. After touring and talking to beekeepers for about a week, Mr. Cutts asked the South African beekeepers for comments and recommendations. Remember that they had been managing SHB issues for decades and had a plan. When asked, the South African beekeeper entourage said, "you Florida beekeepers are the sloppiest, nastiest beekeepers we have ever seen!" The South African beekeepers would collect honey supers and extract within 48 hours and then put the supers back on the colonies for cleanup. Florida commercial beekeepers would collect supers, stack them in their warehouse next to the extracting room and extract as soon as they could, days or weeks later. This is a great opportunity for SHB to start feeding without interruption by the colony. Some of the commercial warehouses had two to three inches of SHB larvae as well as the 'slime' associated by the beetles, produced by the yeast Kodamaea ohmeri. The employees were walking through this mess! South African beekeepers were not impressed!

*Continued on page 4*

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*Photo courtesy of Tyson Sawyer*

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# President's Message

It's that time of year, when a few hundred "newbees" all around the state are heading off to school…bee school that is. 20 beginner and seven intermediate sessions are being offered in Maine, ranging from a half day to five weeks long. (Contrast that with 2019 when MSBA's website listed 42 sessions.) One third virtual and the rest in-person, these programs are run by chapters, adult education, cooperative extension and beekeeping supply businesses. Some include an "open hive" segment in spring, which for many of these new beekeepers will be their first glimpse into an actual hive.

Is it absolutely necessary to go to bee school? Probably not, but it can provide a substantial head start in understanding hive management. There are plenty of great beekeeping books, YouTube videos, websites and online forums, but they don't all promote seasonal practices that fit with Maine's climate. With so much information out there it can be difficult for a neophyte to discern accurate and locally relevant material. Consider how-to videos: in the search results for oxalic acid sublimation, demonstrations can be found that are conducted by beekeepers wearing recommended protective gear: respirator, goggles and gloves. Look a little further and you'll see the same treatment being performed by persons standing right next to the hive with zero protection.

Over the years I've helped several new beekeepers in my small community who've found me through word of mouth. Most had not done a course – or much of anything else in the way of preparation. In many cases their hives were experiencing a dwindling population and/or absence of brood. I felt that they could have had a thriving colony by that point if they'd had learned some background on critical first steps in establishing a colony, whether in a class or a good beekeeping book. This is not to say these folks won't become proficient beekeepers – some of them ended up doing quite well. It's just that having an educational foundation can speed up that process. And the learning shouldn't stop there, because it's not easy to keep healthy, productive bees. Sometimes it feels like the cards are stacked against us and our bees: varroa mites and the viruses they vector; queen issues; swarming; small hive beetles (they're coming); robbing; dearths. Even if you are super conscientious – doing everything right, someone else's poorly cared-for, varroa-infested colony in the neighborhood can ruin all your efforts.

Every once in while a statistic on beekeeper attrition is published, usually that 80% quit after three years. I don't know of any actual survey conducted but it's probably not far off. The idea of becoming a beekeeper can be very attractive and compelling but the actual work, expense, high rate of failure (and the discomfort of long sleeves and a veil in the dog days of summer) isn't always considered. MSBA's Education Committee is tackling this issue by creating a program that explores the pros and cons of getting into beekeeping. It will be designed for use by chapters and individuals in public settings such as libraries, town halls, adult ed and other meeting venues.

Fun fact: there are more beekeepers now than ever in Maine; the number of MSBA members (over 900) has doubled since February 2019.

With 15 years' worth of accumulated beeswax, I started making candles using silicone molds from Betterbee and Mann Lake in December. They are expensive but supposedly last a long time. Both companies had good flash sales in November and December. I don't know why I waited so long to do this because it's really fun and especially gratifying when the detailed candles come out of the molds. I've garnered many tips and tricks from a great Facebook page called *Pure Beeswax Candle Making*.

The Bee-ing Apis cartoon below was created by York County beekeeper Rob Hull. He calls it "a comic that tries to find the intrinsic humor in honey bees, beekeeping, and life." The series was born during his second year of beekeeping in October 2015 during a family drawing session at the dinner table and, as Rob says, "has taken on a life of its own." By the time you see this *Bee Line* he will be close to, or have surpassed 500 Bee-ing Apis comics. A compilation of his work was recently published in a book.

Judith Stanton


*Printed with permission from Bee-ing Apis*

Continued from page 1

## Small Hive Beetles...

SHB are looking for a safe, warm place that has lots of positive resources to reproduce like other organisms. Their Nitidulidae cousins must find some rotting fruit, sugary sap, or fermenting melons and maybe some pollen for protein so they can reproduce and lay healthy eggs. SHB adapted so that they can obtain all their nutrients from honey bee colonies—honey for concentrated energy, pollen for protein, a dark, warm site for SHB larvae to develop, soft squishy eggs and larvae, plus royal jelly—making the bees' home a buffet smorgasbord of resources. So SHB adapted, and with their roundish, smooth, tank-like bodies that are hard for bees to grab and manipulate, developed a relationship with honey bee colonies first from Africa to now on several continents. This survival adaptive lifestyle became successful.

*Small hive beetle larvae*
*Photo courtesy of Jerry Hayes*

This is what we have learned approaching 30 years with this new honey bee colony predator.

SHB are adapted to seek out honey bee colonies that are declining in health, vigor, and population. If a colony is weakening because of poor beekeeper monitoring and safe, efficacious control of our biggest honey bee health concern—Varroa destructor and the Varroa/Virus legacy—the colony is a prime location for SHB to reproduce. When a colony is sick for any of a variety of reasons, it is stressed and produces stress pheromone odors. SHB have sensitive club-like antenna that can pick up those stress pheromones several miles away and follow them to the apiary or directly to the colony. They, meaning sometimes hundreds of SHB, who independently picked up the weakening colony(ies) stress odor, will select a colony to wait in until the colony(ies) have weakened even more, then immediately begin laying eggs. Some may have already entered the weakening colony(ies), and other than the bees harassing them, are not in any danger. If they have been in the colony for several days, they also can pick up odors and have bees think they are one of them and feed them via trophallaxis. Sometimes if the colony is still strong enough, it can herd some SHB and corral them in an area with a propolis wall around it. But this is only temporary.

When the SHB females begin to lay eggs, they can deposit hundreds in and around capped brood or bee bread. Depending on hive temperature and humidity, an egg hatches after one to four or five days. When it hatches, the SHB larvae look different than the plump, fleshy wax moth larvae that you may have seen. SHB larvae are thinner with a tough cuticle and have three pairs of short strong legs at the front of the body. Wax moth larvae have the three pairs of true legs at the front of their body and four pairs of fleshy legs toward the back of their body called prolegs. The SHB larvae are devious at seeking and finding food in the colony. This food is brood, which is high in nutrition, bee bread, and honey. The SHB larvae obtain nutrition with the help of the yeast Kodamaea ohmeri which has a symbiotic relationship with the adult SHB; they work together. When Kodamaea is introduced to a colony, it starts feeding on honey and other resources and produces a thick slimy goo that helps it spread and pre-digest food for itself as well as a deterrent to honey bees trying to live in the colony. Kodamaea also produces an odor that attracts SHB outside of the colony as well. This is where our European genetically based honey bees are at a loss. African bees in this situation would have left that location long ago, but our European bees will hunker down and die in place. The SHB and slime displace them, driving them out of the hive. In seven to ten days, the SHB larvae mature, then crawl out of the colony and drop to the ground. If the ground below the hive is moist enough, they may burrow down several inches to several feet to pupate into an adult SHB that emerges, and the life cycle begins again. If the soil is dry and not conducive to burrowing into the soil, the SHB larvae will crawl hundreds of yards to find a location along a tree line or field setting that is more favorable.

If your colony has become an SHB nursery and it is slimed and larvae are emerging, it may be too late to save it. You didn't manage, inspect regularly, sample and treat for Varroa and waited too long to correct the problem. That colony is now repellent to honey bees and basically unusable to them….and you.

*Photo courtesy of Bram Cornelissen*

In the southern US, SHB adults can overwinter in the environment or inside a hive that is weakening. Here in the north, they overwinter inside the colony, specifically inside the cluster that is warm and safe. Remember they can 'trick' the colony that they are one of them. And then in the spring they can assess whether that colony or others in the area are potential reproductive possibilities.

A variety of traps and chemical control measures are available to manage SHB. Having less SHB in your colony is better than more. But…. if your colony is attracting SHB what does that tell you about the colony health and your management of it?

# Master Beekeeper Programs

by Jane Dunstan

Beekeeping and beekeeping education have changed dramatically over the past decade. We all learn differently and have a variety of reasons to pursue further education. Fortunately there are no "one size fits all" master beekeeper programs in existence, which requires us to research existing programs based on our styles of learning and goals. Andrew Dewey shared "I think it is extremely important to understand what the different programs emphasize and how they offer instruction, to make sure it fits well with your learning style." There are several master beekeeper programs, while designed differently, which provide challenging and rigorous curriculum resulting in quality outcomes on behalf of the beekeeping student.

***•Cornell Master Beekeeper Certification Program*** consists of a series of four online courses which equip beekeepers from the hobby to commercial level with concepts, knowledge, and best management practices needed to pass written, oral, and field examinations. Students participate in interactive learning and contribute to discussions moderated by Emma Mullen, Extension Associate. Three years minimum beekeeping experience is required and a discount is available to MSBA members.

***•Montana Master Beekeeper Certificate*** is offered through the School of Extended and Lifelong Learning (SELL). The online program consists of three university courses at the apprentice, journeyman and master levels and includes participation in discussion groups and completion of assignments and quizzes. Program completion is three years.

***•University of Florida Master Beekeeper Program*** is managed by the University of Florida Honey Bee Research and Extension Laboratory and is composed of four levels: Apprentice, Advanced, Master and Master Craftsman. The duration of the certification program is a minimum of five years.

***•EAS Master Beekeeping Program***, founded in 1978, is the longest running beekeeper program in the US. Unlike other programs which have courses or levels, EAS supplies an outline of examination subjects and a list of reference materials for self study prior to completion of an oral, written, lab and field exam. Testing occurs during the annual EAS conference. A minimum of five years beekeeping experience is recommended.

Beekeepers who have completed master beekeeper programs, as well as those currently enrolled, were interviewed about their experiences. When asked what the impetus was to become a master beekeeper the responses were very similar. "I thought it was a natural step forward with beekeeping. I have always been willing to share knowledge and help others be successful" Mark Cooper replied. Carol Cottril stated "I felt that preparing for the master beekeeper exam would compel me to study and improve my knowledge base in order to take the exam. I enjoy teaching new beekeepers and it is important to present accurate, up to date material. Studying for the tests made me dig deeper into aspects of beekeeping that I might not have read up on otherwise." Kevin McDonnell is currently enrolled in the Cornell program and stated he entered the master beekeeper program to improve his knowledge of beekeeping. "My goal with the program was to improve my ability to maintain a sustainable apiary and learn more about bee biology, bee diseases and how to best manage bees to have a successful apiary." Andrew Dewey completed two programs: University of Montana and EAS. "I wanted a certification that acknowledged I knew what I was talking about. It was perhaps Tony Jadczak who made me start to realize that I didn't know as much as I thought I did; that being a master beekeeper isn't an end in itself but the start of a lifetime journey into learning about bees." Erin MacGregor Forbes acknowledged "I started down the road because I was feeling really motivated but didn't have a specific direction; I hadn't ever taken bee school because schools were limited then. Rick Cooper suggested I look into the master beekeeper program because it forces you to study things you might not be personally interested in. I went into it with an education perspective, not with a goal of becoming a master beekeeper. When I went to my first EAS conference, I met Ann Fry, a serious sideliner from NY and was immediately attracted to her whole operation. I saw someone who looked like me...and that was what started me on the path." Lynne Gobeil, currently enrolled in Cornell's program, responded "I decided that to further my understanding of beekeeping on a deeper level, I needed more in depth instruction. I wanted to be able to mentor beginners with the best and most up-to-date beekeeping practices and have the ability to explain why beekeeping is an art and science."

Interviewees were asked what has been or is expected to be the greatest benefit in obtaining the certification. Most recognized that working toward a master beekeeper certificate was part of the educational journey of beekeepers. Carol shared "meeting and working with other EAS master beekeepers, especially at the EAS conference. Getting certified as a master beekeeper is only the first step; continuing education and increasing knowledge is the goal and the benefit." Kevin replied that the benefit of receiving the certification is that it shows you have successfully demonstrated a level of beekeeping expertise that qualifies you to be able to mentor and teach others how to be a competent beekeeper. "Achieving a certification is not the end, it is just one step in the continuous journey of learning about honey bees, and how to be a good beekeeper." Mark Cooper felt it opened some doors as an opportunity to teach classes and speak to various beekeeping groups and shared that many folks were surprised at how much was required to become certified as a master beekeeper. Erin added "I would say the greatest benefit is that it definately pushed me out of my own personal inclination box. The first thing I decided upon was to have a

*Continued on page 6*

Continued from page 5

**Master Beekeeper Programs (cont)**

specialty which led me to apply for a SARE grant to look at comparing northern raised queens. I had to think about designing a project and that whole process led me to start speaking publicly and traveling which does not come naturally to me. I enjoyed the challenge!" John Hildreth commented it "probably helped with the introvert side of my persona as it requires you to teach, and educate and be a better ambassador for the bees in your community."

The final question posed to the group was whether the master beekeeper program was for everyone and responses varied. "A big part of the master beekeeper program is a commitment to pass that knowledge on as a representative of the beekeeping world. Not everyone has the desire to speak and educate either the general public or fellow beekeepers" replied Mark. "The EAS Master Beekeeper Program emphasizes education and service; sharing knowledge with others. If you want to continue learning and teaching others, then it is the program for you!" stated Carol. Erin felt it should be a requirement for everyone who sells supplies and fields questions concerning bees and their management. John stated "no, I do not believe it is for everyone, just like beekeeping is not for everyone. Most people get into beekeeping as a hobby; if you are able to manage your apiary properly, it can be done on a part time basis. Once you decide to become a master beekeeper then that free time is used up in training, learning, teaching, mentoring, answering calls and emails, swarms, workshops, and conventions all of which I am thankful my day job allows me to do when needed." Lynne shared "everyone with more than a basic understanding of beekeeping could benefit by taking this course (Cornell). The goal of this program is to educate beekeepers to take a leadership role in the community and with other beekeepers, to inform and interpret the latest information regarding honey bees and related topics."

# Apiary Tomes

by Thomas Bartlett

Greetings from your author. I have been graciously and with caution no doubt, asked by our editor, Jane Dunstan, to present an article concerning books on the subject of bees. I say “an article” because after this initial one, the request may be withdrawn. Let us keep our pollen bags crossed, shall we? You will quickly notice the slant I take in my writings. Fryeburg is my hometown and I now live in the very downtown area of Bangor. Educated by the University of Maine and experience, I consume honey daily and occasionally am stung as a reality check in with my hosts. Maine State Beekeepers Association has kindly identified me as Director at Large (2023), which may be changed to at Loss (of mind).

So here you are walking about in a yard sale, inside a used or new bookstore, or locked in Amazon's book section, or within Mann Lake's catalogue (note the old fashion spelling) or in the Chicken Barn on Rte 1. So many to choose from, so many attractive covers, so many unknown authors, so many choices ??? What are the reading levels, who is who in the bee world of authors, will it be read for pleasure or future reference material, which one becomes the first of many or do I add to my collection? Hard answers to these questions. Or, shall I read your column and let you become my guide? Interesting, flattering though and kind of you (I accept), but a slow process to be sure; buy one or more now to exercise sound judgment.

So where to begin....judge a book or hive by its cover is a metaphorical phrase that means one should not judge the worth or value of something by its outward appearance, for within lies often a sweet story and adventure. Just because the title has the word “bee” in it often refers directly to the opposite, for the content is anything but; e.g. take *Bees* by Rudolf Steiner, *The Secret Life of Bees* by Sue Monk Kidd, and William Shakespeare's, *To Bee or not to Bee*'. I love titles which contain, *The Complete Guide to* ..for the book has become incomplete the day it's published; we always forget something to have put into it or edited something out.

A smoking beekeeper's book is the strongest kind of circumstantial evidence which becomes a fact that serves as conclusive and serious evidence that you have surrounded yourself with bees, just short of being caught in flagrante delicto. Sticky honey fingers often leave the page marked for where you will continue your adventure.

A bee book in hand is worth ten thousand bees in a hive. A book full of color photos is the Life Magazine of today. Visual learners rejoice! Audio learners, buy the CD....

So let us begin with bee books. *Honey Bee Biology & Beekeeping* by Caron & Connor is a well balanced informative issue in a textbook form covering a vast array of topics presented via photos, illustrations, drawings and writings. As we grow in bee management during our beekeeping years we ask questions of the how, what, why and when will bees do in their life cycle throughout the year. This book provides so many answers to managing our hives. It is a reference text to build our knowledge and refresh our memories. So a suggestion is to waggle dance to your local bookstore and treat yourself to rather moderately expensive joy of back-to-bee-basics reading.

# Pollinators and the Gardens That Feed Them: Creating Pollinator Friendly Landscapes

by Jean Vose

Pollinators are essential to our environment and responsible for the survival of 30% of the human food supply and 90% of our wild plants. It has been estimated that roughly 90% of the flowering plants worldwide require an insect or animal to distribute their pollen in order to set fruit and seed. Beyond agriculture, pollinators are keystone species in most earthly ecosystems.

Considering the growing concern over the recent loss and disappearance of honey bees and other pollinators across the country, many backyard enthusiasts are rediscovering a relatively simple and fun way to assist not only the honey bee but also the other essential pollinators in their back yard and gardens. By providing a pollinator-friendly habitat in the yard, one can increase the quality and quantity of their garden flowers, fruits, and vegetables. A pollinator garden is planted and designed with specific nectar and pollen producing plants. Gardening to encourage pollinators allows us to understand and appreciate a part of nature we often don't notice: the insects. Many species of butterflies, bats, birds, moths, flies, wasps, and even mammals are also pollinators. Pollinator-friendly landscapes are places where pollinators can forage, build nests, and rear their young. Through simply looking for food, thousands of species of insects (and animals) help plants to reproduce. They are so essential to reproduction that much of the world's plant life could not exist without them. In many places, the essential service of pollination is at risk from habitat loss, pesticide use, and introduced diseases.

When we began keeping honey bees in 1986, we had just bought our home in Worcester. That first year we had the slope behind the hill cleared and made into four terraces about 75 feet long by four to six feet wide. We planted vegetables and herbs and shady plants, and asparagus, and shrubs and fruit trees. And, of course, we planted flowers for our "girls." In short, we planted all sorts of plants; some for our bees and some because we liked the catalogue descriptions or how they looked or because our mothers had grown them.

Slowly, over the years, we began to pay more attention to the insects and pollinators in our yard and their nutritional needs. In addition I became a Master Gardener and Certified Horticulturist. My journey into planting for pollinators began through many articles in the now defunct National Gardening Association magazine. They identified not only pollinator plants but also companion planting. I jumped right in developing raised garden beds, using trellises, and plantings to help plants grow better for both us and for the pollinators. We continued these practices when we moved to Maine in 1998, but it wasn't until I retired in 2010 and had a bit more time on my hands that I began to share what I've learned and practice through teaching programs.

To create a strong environment for bees, pollinators, and other creatures, we need to garden with nature. There are four basic steps to creating pollinator friendly gardens: their need for food, water, shelter, and good habitat. Pollinators are not so different from us in their need for food, water, shelter, and good habitat.

**Pollinators Need Food**

Plant for a sequence of blooming flowers throughout the growing season. Different pollinators emerge at various times of year and have differing lifespans and periods of activity. Create an ongoing pollinator buffet throughout the growing season by planting a sequence of overlapping bloom. In turf areas allow for pollinator-friendly plants like dandelion and clover. The growing season here in midcoast Maine stretches from early spring (late April) through late fall (usually early October).

Skip double-flowered plants as they have little, and sometimes no, nectar or pollen. While they are lovely to our eyes, they may be a source of starvation for a bee or other pollinator. Find the beauty in what the plant does, not how it looks. Use plants that have naturally occurring forms that pollinators can recognize and use. When ordering seeds, check the descriptions carefully to see if they have been bred to be pollen-free. Many sunflowers fall into this category.

*Photo courtesy of Jean Vose*

Best bet? Use open-pollinated, heirloom varieties. Use native plants to support native pollinators and your ecosystem. The key here is evolution matters! Native pollinators have evolved with native plants and excel at pollinating those species. There is some research showing that local native pollinators have a strong preference for native plants. In some cases, pollinators and plants depend on each other. Specialist pollinators, like squash bees, depend upon a small group of plants or even a single native plant – in this case squash blossoms.

Be sure to include flowering trees, shrubs and vines. Many woody plants, trees, shrubs, and vines, offer flowers that can feed a large number of pollinators. Some early blooming trees and shrubs may be the only source of pollen or nectar for early emerging bees. Think shadbush, skunk cabbage, pussy willow, red maple, trumpet vine and common hops (blooms in fall). Food sources should also include larval food sources as well. Without the larval food sources, you will not see butterflies because there are no caterpillars.

Plant a diverse array and number of plants with different flower shapes, sizes, and colors. Each pollinator type is attracted to different plant characteristics. While a hummingbird favors red flowers, a bee is enticed by other colors, including purple, violet, blue, white and yellow. Not every pollinator can access the same kind of flower; some need very open flowers while others can use more closed flowers or long, tubular flowers. A pollinator's tongue length, body size, shape and strength help determine what flowers it can use. Plant diversely to accommodate an array of pollinators. Sizeable patches of the same plant are the easiest for pollinators to find. A three-foot-square patch of a single species is a good place to start and can be repeated if the landscape is large enough. Repeat plant species and flower colors throughout your landscape. Achieve floral balance by planting diversely but sufficiently.

**Pollinators Need Water**
Clean water sources are vital for pollinator health and development and include lakes, streams, rivers, ponds, and wetlands. Water can also be provided in residential landscapes using shallow containers with sloping sides that are kept clean by changing with fresh water, both for the bees and the birds. Adding rocks or gravel that rise above the water surface provide resting sites and reduce the risk of bees drowning. You can use a birdbath, fountain, dripping faucet, small pond, or mud puddle. Mix a small amount of sea salt or wood ashes into mud to give bees and butterflies minerals. Float a piece of wood in a birdbath to provide a landing platform for bees.

*Photo courtesy of Jean Vose*

**Pollinators Need Shelter**
Provide nesting sites for pollinators. 70% of native bees nest in the ground and need bare or lightly vegetated soil in a sunny spot. Leave bare patches of ground for those native bees that build nests in soil and keep them free from foot traffic. Accommodate the other 30% of bees that nest in old mouse holes or tree cavities with pithy plant stems, dead trees, crevices in stone walls, or man-made boxes with nesting tubes or drilled holes. Leave a few weeds or “wild spots” at the edges of your landscape as good bee nesting resources. Plants with fluffy or fuzzy fibers or foliage are also good for providing nesting materials including ornamental grass plumes, lambs ear foliage, fuzzy seedpods or soft casings. A well-layered landscape with trees, shrubs, vines, and perennials will accommodate most other pollinators.

**Pollinators Need a Safe Habitat**
**Habitat** is, of course, what has already been described. Leave a few weeds or “wild spots” at the edges of your landscape as good bee resources. Provide a variety of sites to accommodate a variety of bees as described in shelter. Bunch grasses might attract bumble bees, which occupy old mouse nests. For native pollinators to survive the winter, provide sheltered nesting areas and overwintering habitats. This can be as simple as a brush pile, leaf litter, birdhouses, wooden structures or old masonry.

The thriving, healthy garden is one free of pesticides. Skip the "secret sauce" (pesticides) and attract nature's pest control (beneficial insects, a.k.a. natural enemies) to your garden with native plants that both attract and support them. This practice is known as companion planting.

**Companion Planting** ~ How does it work? It is the planting of different crops in proximity for any of a number of different reasons, including pest control, pollination, providing habitat for beneficial insects, maximizing use of space, and to otherwise increase crop productivity. Companion planting is a form of polyculture. It creates diversity, enriches the soil, provides shelter, supports other plants and affects insect behavior. Many of the plants used are to attract pollinating insects while others are used to either repel or act as a decoy for harmful insects. For example, dill planted with tomatoes helps repel the tomato hornworm, calendula and parsley planted in the asparagus bed helps repel the asparagus beetle. More on this topic in the next issue of *The Bee Line*.

There are many books and websites that have lists of plants specific to pollinators. The Maine Cooperative Extension has several bulletins for specific pollinator floral needs.

https:/extension.umaine.edu/publications/home/garden-and-yard/
https:/extension.umaine.edu/gardening/manual/plants-pollinator-gardens/
https:/extension.umaine.edu/gardening/manual/plants-pollinator-gardens/

# Bait Hives

by Jane Dunstan

Swarm season will soon be upon us. Many beekeepers are eager to prevent swarms while others are excited about catching them to either establish another colony or boost a weaker one.

The goal in using bait hives is to collect swarms; either swarms from your own apiary or a neighbors' swarms. Usually, bait hives are established early in spring before swarm season begins.

The following instructions are from Information Bulletin No. 187 which is available from Cornell University. Authored by Dr. Thomas Seely and Roger Moore it recommends constructing an empty box for a bait hive as illustrated in the diagram. An alternative strategy is to utilize an existing deep Langstroth hive body (1.4 cubic feet) and some frames with drawn comb which will serve as an attractant to bees and aid in the establishment of the new swarm. This arrangement will also be beneficial in the transferring to a permanent hive later on.

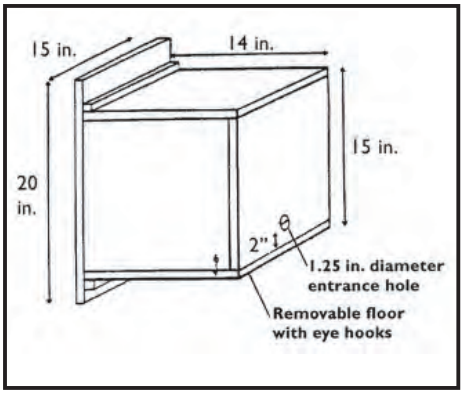


*Figure 1. Bait box dimensions from Cornell University Bulletin 187, Bait Hives*

In order to convert an existing deep box to a bait hive, the bottom and top of the box need to be secured with plywood after placing frames in the box. It is recommended to leave nailheads or screws slightly elevated for ease of access. Place another sheet of plywood on the top to keep rainwater out of the hive. A metal flashing that overlaps would work equally well. The schematic shows the bottom is removable with the use of eye hooks. Seal any cracks to prevent light or moisture from entering.

Drill a 1 1/4" - 1 1/2" hole at the bottom in the front of the box. This will be the ONLY entrance to the bait hive. It is advisable to place a nail across the hole to prevent other critters such as birds or squirrels from entering the box.

Select a few old frames with drawn comb. Several references have suggested placing older drawn frames on the outside and using foundationless frames with only a starter strip in frames in the center of the box to create greater volume for the bees.

Place a cotton ball with two to three drops of lemongrass essential oil in a ziplock baggie and make a few holes in the bag for release of the odor. Seely, 2010 explained that the use of scent lures (which can be purchased commercially) are designed to mimic attraction pheromones that are used by scout bees to indicate the presence of a desirable new location.

Place the hive about 15 feet off the ground in an area that is south facing, shaded but very visible. Bees avoid bait hives in direct sunlight. It is also recommended to place the bait box at least 300 feet from your own hives if you are attempting to attract swarms from your own apiary.

The last consideration is how to mount the bait hive which will be heavy! The occupied box can remain at the original site for about two weeks prior to relocating it. Place a screen over the hole to ensure they will remain in the hive while removing it from its locale.

Please remember: SAFETY FIRST!

References:

Seeley, Thomas. D. (2010). *Honeybee Democracy*. Princeton, NJ: Princeton University Press. pg 60-61

https://agdev.anr.udel.edu/maarec/wp content/uploads/2010/03/BAIT_HIV.PDF. Publication 3.7. Author: Dewey Caron. University of Delaware. Revised March 2006

*Bait Hives for Honey Bees* Information Bulletin187, Cornell Cooperative Extension Publication by Dr. Thomas Seeley, Roger A. Morse and RIchard Nowogrodzki

# Tips and Tricks

by Jason Peters

**Finding Queens**

Finding queens can often be a frustrating task but it is a skill that is required for making many hive manipulations. Below are some tips and tricks that we use that can help make this task much less challenging and your inspections more enjoyable.
-Have the sun overhead or behind you.
-Focus on finding the queen's abdomen as it is significantly larger than the abdomen of a worker bee.

-Don't focus on looking for the mark if you have a marked queen as it can be removed and queens are often replaced through swarming or supersedure.
-Always look at the face of the next frame in the box as you remove a frame, as queens can often be seen moving downward as they try to move away from the light.
-Sit or kneel when looking for queens as you will be more relaxed and focused.
-Use little smoke as heavily smoking the bees can make them run.

When going through a double brood chamber hive, separate the boxes and place the upper brood chamber diagonally on your upturned telescopic cover/ hive lid. This temporarily prevents the queen from having access to both boxes. (Hint: queens are more likely to be in the top box earlier in the season). Remove the second frame from the hive body to be inspected and begin your search by looking over the frame like you are reading a book. Begin from the top left and scan over the frame until you reach the bottom right corner. Once you are finished scanning over the first side of the frame, hold the frame at eye level with the bottom bar toward your face and look over the frame while the comb is in a horizontal position. On frames with lots of bee coverage, she can stand out as she is larger. Flip the frame over slowly and repeat on the other side. Once you are finished, lean that frame against the front corner of the hive to give yourself room and so that if you missed her, she is in a safe place. Now begin removing the other frames one by one repeating the process of scanning over the frames but placing each frame back into the box in the same order and orientation prior to going onto the next one. If you do not find the queen, move onto the second box repeating the process. Once you have found her and have the frame containing the queen, it is a good idea to watch and take note of the behaviors of the bees.

Often times during inspections the queen is on the run (especially young queens) and the bees surrounding her will part, forming a sort of wake behind her as they give her room to move. If you don't find the queen after looking through the hive twice, close it up and come back another time. One way to make this job easier for your next inspection is to place a queen excluder between the two brood chambers at least four days prior to your next inspection. With the queen excluder placed between the two brood chambers, the queen is now restricted to whichever brood chamber the queen is in. Upon your next inspection, look for eggs as that will indicate which box your queen is in making your job significantly easier. This is also a great way to prepare for making splits if you normally have trouble finding your queens. Finding queens is significantly easier in smaller colonies or when managing bees in single brood chambers.

Looking through photos of queens and watching videos of others performing hive inspections can be helpful and provide some practice during the off season. Remember to keep it fun and make this the year that you become proficient at finding your queens.

*Photos courtesy of Jason Peters*

MSBA
Maine State Beekeepers Association

**WEBINARS**

February 28, 2022 7:00 pm ***Managing Varroa: Insights from the NYS Beekeeper Tech Team.*** Presenter: Emma Kate Mullen, Senior Honey Bee Extension Associate, Cornell University. This talk is a combination of sharing research and giving recommendations on Varroa management.

March 22, 2022 7:00 pm ***Products of the Hive.*** Presenter: Landi Simone. It ain't just honey, honey! And it ain't just candles, either! The bees give us honey, wax, propolis, pollen. With a little creativity, you can make creamed honey, artisan spreads, varietal honeys, comb and chunk honey, beeswax soap, lip balm, creams and lotions, propolis extract, and even more!

# Ask A Master Beekeeper...

**What beekeeping book do you use as your "go to" resource when you need answers to a question or situation you are facing with your bees?**

*The Beekeeper's Handbook* remains my favorite resource in book form. I like receiving my *Bee Culture* subscription once a month to address beekeeping seasonally and also to keep me apprised of current research and up-to-date information. *Philip Gaven, Master Beekeeper*

If I could have only one book it would be *The Hive and the Honey Bee*. Depending on the question, I primarily use more focused works. For example, in matters of biology, I routinely use three: Winston's *The Biology of the Honey Bee*, Collison's *A Closer Look - Honey Bee Biology* and *The Honey Bee Inside Out* by Celia Davis. *Andrew Dewey, Master Beekeeper*

*The Beekeeper's Handbook* (Sammataro and Avitabile) or *Honey Bee Biology and Beekeeping* (Caron and Connor) or I consult with any of my mentors! *Chris Rogers, Master Beekeeper*

Since I teach beginner bee school with Diana Sammataro's *The Beekeeper's Handbook*, I find this is a great resource for the first five years of hobby beekeeping and I refer to it all the time for my new mentees. Now that the Bee Informed Partnership is interactive online I suggest that to all those more tech savvy than me. *John Hildreth, Master Beekeeper*

**In anticipation of spring which is just around the corner, what words of wisdom do you have for beekeepers who have tucked their hives in for the winter?**

The hardest thing for new beekeepers is to simply leave their bees alone in the winter. I was taught to never open a hive till the first 60° day after St. Patrick's day. I like to heft hives in January and I'll add candy boards (QUICKLY) to hives that are light. I also give all of my hives a dose of Oxalic Acid vapor on a day when the temperatures are above 35°, ideally some time between the winter solstice and the middle of January. *Philip Gaven, Master Beekeeper*

Honey bees are much more robust than they often get credit for. If you've controlled Varroa and made sure the bees have plenty of food, you've done much of what you can do for your bees. Be ready to act based on your inspections and spring time phenology. *Andrew Dewey, Master Beekeeper*

Leave your bees alone as much as practicable. Check them for food reserves and be sure the entrances are open before warm spells. Otherwise leave them alone. *Chris Rogers, Master Beekeeper*

Be patient, you really can't do anything in January to fix or resolve. I like to give my bees some love around Valentine's Day with a quick look to see where they are in the hive and if they are at the top do they need more food. *John Hildreth, Master Beekeeper*

**What would you identify as the most important task or tasks in early spring management?**

The first chore of the first inspection is to assess honey stores to be sure they have enough until a major nectar flow begins. I prefer not to feed syrup if the bees don't need it, so it depends on each hive's situation. I follow Rick Cooper's advice to do a "spring cleanup" around tax day (April 15): cull old, broken, or droney frames and make a plan for rotating out any hive parts that have reached the end of their useful life. (It seems like bottom boards go first.) *Philip Gaven, Master Beekeeper*

Think big picture and advanced planning: what do your bees need most to get through next winter? (My answer is keeping Varroa under control followed by the bees either need to get or be provided with adequate nutrition.) *Andrew Dewey, Master Beekeeper*

Make sure strong colonies don't starve. Treat for mites if spring treatments are part of your varroa management plan. *Chris Rogers, Master Beekeeper*

Don't let them starve, spring is the most critical time as there is always inclement weather interrupting them. Start your mite monitoring programs. *John Hildreth, Master Beekeeper*

# VARROA: FIGHT THE MITE

by Jane Dunstan

***Help your bees to be healthy, productive and free of mites***. That's a tall order but a realistic one. While bees are perfectly capable of managing and protecting their hives, threats of pests, diseases and other envionmental toxins continue to assault them. There is much the beekeeper can do with hive management interventions to assist them. Practice good hive hygiene by using clean equipment that is ONLY utilized in your apiary in order to prevent spread of disease. When choosing a location for your colonies, consider existing foraging opportunities. Do they have a smorgasbord of plants, trees and wildflowers to supply their need for pollen and nectar during spring, summer and fall? A desirable hive location includes a dry area versus a moist environment which is conducive to disease. Colonies require a young healthy queen who will propagate the colony with strong numbers of worker bees to operate on quality comb. It is recommended that older comb be recycled out to the edges of the hive with plans to remove and replace it with new foundation or comb. Regular inspection of your hives will address overcrowding and the need to equalize or split if necessary. Water which is fresh and accessible is a must. Regular mite washes performed on a monthly basis will provide data which will quantify mite levels in your hive as well as identify potential infestation. Keep accurate notes! Remember to treat prior to the emergence of winter bees around the third week of August and continue to assess mite levels well into the fall when mite numbers skyrocket. Leave more than adequate honey on the hive in preparation for overwintering. If hives are light on honey storage at the onset of fall, feed them as necessary.


Happy Hive Farm is holding a free new beekeepers workshop on Saturday, February 5th from 9a.m.-12p.m. at the Hartford Community Building next to the Town office on Rte. 140. Snow day will be the following Saturday, February 12th, same time.

The following topics will be covered: woodenware, foundation, tools, installing packages, nucs, feeding, diseases and treatment.

Kindly wear a mask and bring a notebook. I look forward to helping you learn about beekeeping.

Kindly rsvp to Al Borzelli at 388-2120.
Thank you

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