

The Bee Line



Newsletter of the Maine State Beekeepers Association | mainebeekeepers.org

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Nectar Dearth

by Jane Dunstan

Dearth...such a funny word. Years ago when I started keeping bees, I vividly recall beekeepers talking about a dearth. The flowers were blooming, the fields were covered in wildflowers...what were they referring to?

Merriam Webster defines dearth as a scarcity or an inadequate supply. Mid to late summer is typically when we see a nectar dearth which simply means there is a shortage of nectar-producing flowers as a result of inadequate rainfall, excessive heat, or less-than-ideal growing conditions; at a time when the hive population is at its maximum. It is sometimes difficult to recognize a dearth; everything is green, flowers are in abundance yet not all plants produce nectar that is accessible to honey bees. If dearth is not recognized, there can be serious consequences for what once was a thriving colony in summer. Lots of bees eat lots of food and if dearth is occurring, bees will consume vast amounts of nectar and honey stores. Nectar is critical as a food source for adult bees as well as for developing brood. Robbing may commence early. Strong colonies rob weaker ones of their food supply. Capped honey that is ravaged by marauding bees often attracts other predators such as yellow jackets who join in the frenzy. Not only do hives have the potential to be decimated during a robbing attack, but varroa mites are transferred from one colony to the other.

Behaviors and clues which may signal the presence of a dearth:

- hives appear to be louder than normal with bees hanging around the outside
- honey bees may be observed on flowers that are normally avoided. It is important to know which flowers in your area are nectar producing flowers and which ones are not. Not all flowers produce nectar, especially during a period of environmental stress, such as a drought.
- sampling of the same flower on repeated occasions to reach that last drop of nectar
- robbing and the presence of dead bees at the entrance where fighting has occurred
- defensive behavior is observed. The normally docile hive that is not bothered by your presence now objects and is protective of its existing resources.
- bees are observed in unusual places (i.e. the side of a house or on blades of grass surrounding the hive)
- the front entrance has large numbers of bees and "washboarding" is more commonly seen
- they are curious about new odors and will investigate hoping nectar is present
- bees may fly low, dart, buzz or swoop around performing "fly-bys" in a loud manner. Normally when bees are foraging they are very purposeful and targeted in their departure from and return to the hive.
- increased visibility. During nectar flows, bees are flying to and from in established foraging patterns based on floral availability and location. When those flowers are not releasing nectar any longer, the bees begin searching for and investigating new locations, such as trash cans and hummingbird feeders
- egg laying may have slowed or stopped altogether. If nectar is in short supply, the

queen bee will reduce the number of eggs she deposits or completely stop for a short while until there is a reliable food source to feed young bees

- bees may resort to eating larvae for protein
- there may be a delay in drawing out comb due to inadequate nectar
- queen pheromone may be reduced during drought resulting in a higher number of supercedures

Beekeeper interventions to mitigate the effects of dearth include:

- checking food stores on a regular basis. Colonies can starve in the middle of summer!
- examining frames carefully. Is there evidence of shiny fresh nectar or are cells dry with bees huddled in small areas of remaining nectar or honey
- reducing/eliminating entrances which need to be defended. It takes three bees to guard a one inch entrance. Institute the use of robbing screens.
- feeding bees if necessary. If you commence feeding sugar syrup to weak hives, use an inside feeder and avoid any drips of syrup in and around the hive.
- limiting inspections to under five minutes

Remain watchful and diligent in your observations of the bees and their environment. Timely interventions in a dearth will prevent unnecessary stress and potential loss of bees.

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<https://wildflowermeadows.com/2018/08/the-summer-dearth/>

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President's Message



By the time this is published, summer honey will have been extracted and queens that were laying up to two thousand eggs a day are cutting back on brood production. Everything seems to be going well: alcohol washes/sugar rolls that turn up one or no mites at all. But don't get too complacent – it's a tricky time of year. While the colony is winding down varroa mites continue to ramp up, their populations outrunning the bees and tipping safety margin scales. While your hives are chugging along someone else's down the road could be struggling with a poorly-mated queen or trying to recover from multiple swarm casts. If their keepers haven't been attentive those colonies will sadly become mite bombs. Your superstars may soon be raiding these hapless hives and returning with hitchhiker mites. This is why we need to monitor levels of infestation with increased frequency in August and September. By testing every two or three weeks during that period you may discover an infestation in time to effectively curtail it. During a recent summer two of my powerhouse hives that had tested well under threshold in early August revealed so many mites four weeks later that I didn't even bother counting. Formic Pro pads were immediately slapped on but it was a fruitless effort; both had succumbed to varroosis by the end of March. I wanted to blame a nearby beekeeper who didn't treat, but it was ultimately my responsibility to be monitoring those mites in a timely manner.

For a long time I resisted using the synthetic acaricide Apivar – couldn't bring myself to put those 'hard' chemicals into my hives. I purchased packets two years in a

row and ended up reselling them to other beekeepers. But I kept hearing how effective it was, and knew it was being recommended by beekeepers I respected. So I finally relented and applied strips at the beginning of March. Alcohol washes done in May and June showed zero mites after several rinses in all of my eight colonies. That kind of outcome has convinced me that we may sometimes have to step into some uncomfortable territory to keep our bees healthy.

I've tried almost all of the essential oil and acid treatments available over the past 15 years, most recently oxalic acid vaporization. Someone I've been helping for a while bought a wand with a timer and lets me use it, otherwise I probably wouldn't have spent the money on one. I don't enjoy having to lug a big jump-starter battery and PPE out to my bee yards in early winter. Results have been good but somewhat uneven despite following directions precisely. Spring inspection tests on vaporized hives have mostly revealed very low mite counts, although there have been outliers exceeding threshold. I have never tried the dribble method but know successful beekeepers who get great results with it.

Before oxalic acid was approved my go-to treatment was Mite Away Quick Strips, followed by the reformulated version Formic Pro, which is still my choice for late spring through autumn, as long as the temperature doesn't climb above the low 80s. The ability to use it with honey supers on is a definite plus. After many years of formic acid use I have never experienced queen loss. For nucs I usually go with Apiguard adjusted to the colony size, and HopGuard as an alternative.

There's a smorgasbord of treatments that, along with IPM, can work with or without honey supers in different temperatures and

seasons. The Honey Bee Health Coalition has a great interactive tool that can help you choose which acaricide will work best, at honeybeehealthcoalition.org.

It's not only important to perform mite washes the correct way in order to avoid undercounts, but also in which solution you choose to conduct them. Mites don't just do a free fall down through the screen – they will either be gripping bees with sticky pads on their feet called empodia, or embedded between their abdominal segments. My honey bee hero Randy Oliver of ScientificBeekeeping.com has done research on separating mites from bees through extensive testing of various "release agents" with some surprising results.* He concluded that the most efficient solution is Dawn Ultra dishwashing liquid (one to two tbsp per gallon of water). 91% isopropyl alcohol works equally as well but requires more agitation. Windshield washer fluid, lower concentrations of alcohol and mouthwash all produced unreliable counts.

I was recently reminded of how cautious we need to be in making sure the queen doesn't get inadvertently included in mite washes. In preparation for a test, a very conscientious guy who I've been mentoring carefully examined a frame of young bees to make sure the queen wasn't on it. Six hours later he happened by the hive and found the queen on the ground fanning her wings. She had apparently survived a swim in windshield fluid (which has only small amounts of alcohol and surfactant)! We'll be checking her status next week and will hopefully find her swishing around the hive in good form.

* "Refining the Mite Wash" 4-part series published on ScientificBeekeeping.com and in *American Bee Journal*, July through October 2020 issues.

Judith Stanton



Slovenia and The Beekeepers of Europe

by Suzanne Brouillette



Slovenia is a very small country the size of New Hampshire and used to be the northern part of

the former Yugoslavia. It is bordered by Italy, Austria, Hungary and Croatia having been a major trade route between these countries. Beekeeping has been an important part of Slovenia for hundreds of years with the first bee house recorded in the 1500s. The hives back then were not the AZ hives of today. With sugar being scarce hundreds of years ago, all farms had their own bees as honey was the only sweetener they knew and the wax provided an indispensable material for making candles. These wooded, smaller hives were stacked in several long rows and placed in a "house" in the protected part of the orchards. These hives were called "Kranjii" (Carniolans). This protected the hives from cold, snowy winters and sweltering summers.

In the 18th century, the Empress of the Habsburg Empire, Maria Theresa, established the first beekeeping school in the world. She appointed Anton Janša, a Slovene beekeeper, who became the first teacher of beekeeping. He was from Žirovnica, which is in the Karavanke mountain range, considered the cradle of



Slovenian beekeeping. Janša died young (1734-1773) but did write two books on beekeeping (in German), that became the basis of modern beekeeping.

Anton Janša's home and his recently renovated bee house are in Breznica. Open to visitors, it holds the old bee hives that are smaller and look like little coffins, each with a scene depicted on it. The Slovenian Beekeepers Association was the force behind establishing World Bee Day on May 20th, Janša's birthday.



With the bees all under one roof, the beekeepers at that time noticed that the bees had trouble orienting themselves with so many hives together. At first, they made markings on each hive to distinguish one from the other. Then they started to paint pictures that later developed into a very special art form by the end of the 19th century, esp. between 1820-1880. There are about 600 standard bee panel motifs painted on 50,000 original front boards. They depicted the life of that time, religious and political history, local events, folk storytelling and humorous stories. The oldest panel is from 1758 and depicts an image of the Virgin Mary with child. Even though the paintings started out so the bees could find their hive, it soon became a way for the beekeeper to keep track of each one. Also, the people at that time were illiterate and the panels were a way to tell stories and history. The motifs also were meant to protect them and their bees from curses and accidents. Almost all beekeepers were men so there are several panels depicting a man's view of life and their attitude towards women; however,



A boy who is catching unmarried women with his trousers. A pair of good pants shows that the boy is doing well and is a good catch!

there are no erotic motifs. The panels were usually made of spruce and experienced painters prepared their own paints. Base paints were finely ground and mixed with linseed oil. This technique made the panels very durable against sun and rain.

With over 10,000 beekeepers in Slovenia, there is no need for migratory pollination. The extensive bee transportation they have is to collect certain nectar flows like acacia, chestnut, ivy, linden, sunflower, dandelion, etc. The trucks are moved to the new location at night and left there until the flow is over. The beekeeper comes and extracts the frames, usually right there, puts the frames back in and moves to the next location, again at night. On the trucks, the hives are on both sides with a narrow work area down the middle.



The Slovenian way of beekeeping is based on ancient traditions and highly localized practices. In 2002, the Slovenian government gave conservation status to the Carniolan honey bee, Slovenia's native bee. The importation of any other bee species was banned to avoid the introduction of new diseases and they funded a breeding program. Today, the Carniolan honey bee is the only protected native bee species in the European Union. Slovenian beekeepers feel that by keeping to their own bee

species they will have a better survival rate.

The Slovenian AŽ hive, named after its creator, Anton Žnideršič, allows the beekeeper to monitor his/her colonies more carefully and effectively. They also protect the bees from harsh winter conditions which included strong winds and cold

temperatures. With the threat of climate change, this style of hive may also ward off issues associated with extreme weather patterns.



Of course, the main attribute to these wonderful hives is that there is no lifting. The most you lift is a full capped frame of honey, seven to eight pounds. This allows just about anyone to keep bees but especially children, handicapped persons, older people, those with bad backs or those who do not have the upper body strength. It's also so much more comfortable to tend to your bees in a bee house out of the elements and all your equipment in one place! The aroma of a bee house is incredible and also healthy for you. Apitherapy is well utilized in Slovenia.



In the next article we will examine how to keep bees in the Slovenian AŽ hives.



All photographs courtesy of Suzanne Brouillette.



MSBA VIRTUAL MEETING

October 16, 2021

9:00 AM - 1:00 PM

The MSBA Annual Meeting will be held this year on October 16th in a virtual format. Join us online to participate in this year's educational offerings on the topic of queens. David R. Tarpy will be one of two presenters. In addition, there will be a business meeting, the State of the State address by Jennifer Lund, an election of officers for the 2021/2022 year and a raffle!

Specific details will be available in the October/November newsletter regarding the complete cast of speakers and schedule.



David R. Tarpy
Professor and Extension Apiculturist
Department of Entomology
North Carolina State University

David Tarpy is a Professor of Entomology and the Extension Apiculturist at North Carolina State University since 2003. As Extension Apiculturist, he maintains an apiculture web site dedicated to the dissemination of information and understanding of honey bees and their management, spearheads numerous extension projects (such as the 2005 New Beekeeper Cost-sharing Program that created hundreds of new beekeepers within the state), and launched the Beekeeper Education & Engagement System (BEES)—an exciting online learning resource for knowledge and understanding of bees and beekeeping. His research interests focus on the biology and behavior of honey bee queens in order to better improve the overall health of queens and their colonies. Specific research projects include understanding the effect of multiple mating on colony disease resistance, using molecular methods to determine the genetic structure within honey bee colonies, and determining the regulation of reproduction at the individual and colony levels. His work has provided some of the best empirical evidence that multiple mating by queens confers significant benefits to colonies through increased genetic diversity of their nestmates, particularly through increased tolerance to numerous diseases. More recently, his lab group has focused on the reproductive potential of commercially produced queens, testing their genetic diversity and mating success in an effort to improve queen quality.

Marking Queens

by Mike McNally

How to catch, mark and release queens is a skill that can be learned. There is little doubt that marked queens are a great asset to beekeepers. A marked queen can let you know if your hive has swarmed, superseded, or lost her queen. It is also extremely helpful when making splits and nucs and lastly keeping her safe when you do alcohol rolls for mite population counts.

Before any marking can be done you need to find the little darling. As many of you know this at times can be a challenge. Try to anticipate color by knowing the race of your bees. Russians are dark, brown to black in coloration. I feel like they are clad in camo wear. They are the most difficult to find but made easier if you expect a dark color. Big, fat, golden and regal; these are the Italian queens. They are the easiest to find and when you see them you feel like perhaps you should bow or curtsy before them. Mutts can be any color.

Now we are on the hunt to find her. Where might she be? Anywhere and everywhere! There is a story told by one beekeeper that a queen was found crawling up her leg under her pants. She had the foresight to unzip and reach down inside her pants and grasp the little critter before any harm could be done. This is not my method however. I usually crush bees in clothing first and identify later but usually a split second after I feel the sting and have been shown the error of my ways.

Those of us that go hive diving for the queen should have a method to follow. If no method is followed it is very easy to miss her in unexpected spots. The first thing I do is quickly look at the top of the hive to be searched as well as the outside and landing

board. I have twice found the queen on top and at least once she may have been returning from her nuptial flight. Next I remove the outer cover and check the inside as well as the top of the inner cover. This is followed by checking the underside of the inner cover and the top of the frames. Now you are ready to explore where you are likely to find her, on brood frames. I stand behind my hives and remove my honey supers and start my search in the brood boxes. I number my frames one through ten starting on the left and proceeding to the right with frame #10 on the far right. I look in the top brood box first starting with frame nine and then proceed backwards through the numbers. Sometimes I will go back and check #10. The same procedure is used for the bottom brood box. In the summer it is about 50/50 as to which box you might find her but springtime definitely favors the upper box.

How to find her and what to look for? Her movements are what catches my eye first. They appear to have purpose, then the sense of dragging a caboose behind her (pointed abdomen) whereas the worker bees tend to have a more erratic movement. Try not to pick out individual bees; this will drive you nuts. If you look at the frame as a whole it will be much easier to spot the queen's movements. The ID clincher is the very shiny, black, hairless, dorsal thorax and comparatively short wings and of course larger size. Voila!!! You have found her. Here is the gem tip of the century! Buy a pair of cheap reading glasses, usually a 3.0 diopter or higher. The queen will be much easier to find and be larger than life.

Now that we have found her we need to capture her in order to mark her. I would not recommend anyone try to pick her up with thick heavy gloves. It is too easy to cause injury. At this point it is nice to have another pair of hands. This second person can hold the frame at the right height and angle. If alone gently lay the frame flat across the tops of the frames still in the box taking care not to crush workers that may be



underneath. Queen side up. I like to use a marking cage in my right hand without the foam plunger and use the index finger of my

left hand to gently flick her into the cage. Once in the cage replace the plunger and with gentle pressure pin her to the top of the plastic grid and mark her with the color of the year. She should be marked on her dorsal thorax (top) only. The marking color is changed every year on a five year rotating basis using five colors in this repeating order. White 1&6, yellow 2&7, red 3&8, green 4&9 and blue 5&0. WARNING!!! Test dab your marker on your hive or stand first before marking your queen. The marking pens at times can release enough paint to do harm or drown your queen. Your test dabs will minimize this possibility. I keep the marking cage, plunger, and marking pen in the right pocket of my bee jacket. Quick at hand!

Finally, the release. I turn the marking cage, plunger end down and carefully pull out the foam plunger. This open end is placed over a space between two frames. Be patient; she will eventually find her way out and down through the space and into the hive.

Most of the time it is as easy as described but on occasion all does not go as it should. Remember those little wings that I previously described? They actually work. On a few occasions the queen has taken flight. OMG OMG OMG what to do? Nothing!!! Close the hive back up. She usually makes it back home by nightfall. With time and experience you may want to handle and mark your queens with your hands and marking pens only. Do not hold her by the abdomen. Wings, legs and thorax are okay. Practice on your drones first. Remember the most important thing is to have fun.



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Migratory Hives: Notes from an Assistant Apiary Inspector

by Thalassa Raasch

Up on the downeast barrens, you will find Maine State Apiarist Jen Lund and me surrounded by nodding white bell-shaped blooms of low bush blueberries as far as the eye can see. Most of the plants here are clones. They originate and spread from a single parent plant called a clone which will spread an average 75 to 250 square feet. Slight variations such as red-leafed patches, or taller green patches delineate the various spread of clones. With an average of 109 clones present in one acre of blueberry barren, this yields the great diversity of taste in Maine blueberries. The barrens are managed by several large agricultural producers who manage and cultivate this crop.

Peppered throughout this landscape are clusters of honey bee colony “drops” - clusters of forty to sixty hives placed intentionally for pollination. Empty tuna cans swing off electric fences surrounding each drop site. These are here to teach bears a lesson: hanging tuna or bacon directly on the electric wiring forces a bear to ground the electricity with a tender part of their body like a tongue, lips, or a nose to make a lasting impression. The blueberry companies also buy donuts, rolls, and other sweets every day to feed bears at sites that lure them away from the honey bee colony drops.



Nearly 50,000 honey bee colonies were brought to Downeast Maine during the first week of May 2021 to meet the early spring blooms. Blueberry companies offer between \$150 and \$200 per hive for the duration of blueberry pollination. Many companies will then grade the hives, using apiarists to rate the health of the drops, to confirm that the colonies in their acreages are alive, strong, and healthy.

Bumblebees are also present on the barrens. A flat corrugated plastic box containing four bumble colonies is placed on the ground surrounded by, once again, electric fencing. (I'll let you imagine the fun baby bears get up to with a cute throwable box of bumblebees.) Bumblebees are much more efficient at pollinating a blueberry blossom than honey bees. Hanging below the blossom, they vibrate at a frequency of 270 Hz, or a perfect C sharp, ideal for making blueberry pollen shake out of the flower onto their bodies. Repeating this process, they can pollinate a blueberry flower within five visits. Our sweet honey bee can take up to fifteen visits to fully pollinate the same blueberry bloom. That said, with bumblebee colonies maxing out at 200 workers or so, our honey bees still pack a punch when putting their 40,000+ to work.



Jen and I are up here for a week, using every good weather daylight hour to crack open hives from each migratory beekeeper visiting Maine this year. Most of these hives not only came from out-of-state but also plan on crossing state lines once more when the blueberry pollination is through. Our job is to get to the brood nest of as

many hives as possible and inspect for the presence of any brood diseases (European Foulbrood, EFB, and American Foulbrood, AFB) along with any other pests or diseases that might be affecting the health of these hives. The idea is to make sure nothing bad has entered or will exit the state without our knowledge and intervention.

The hives this year were on the whole robust and healthy. The migratory beekeepers do a good job caring for their bees; after all, their livelihood depends on it. That, and it is clear that Jen has built strong relationships with the beekeepers, and local blueberry companies, all of whom want nothing more than to impress her. We have seen a few recovering cases of chalk brood, and occasional cases of EFB present at some drop sites. This was no great surprise: EFB is a bacterial disease associated with colony stress due to factors like bad hive placement, wet weather conditions, and poor nutrition. When it comes to stress, the migratory hives are often adjusting from their latest geographic placement, not to mention feeding almost exclusively from a single food source, so some cases of EFB are to be expected. We collected samples of slumped EFB brood for researchers in Saskatchewan who are studying the presence of EFB in areas of blueberry production. Participating in larger research studies like these allows the Maine State Apiary Program to be part of important ongoing discoveries about honey bee health.



In our final days Downeast, many of the clone patches show signs of good pollination - their blooms have fallen off and the tiny nub of a green berry is left behind. The migratory hives will be moving on by the final week of May. Depending on the company, these hives are on the final leg of their all-American journey. Many of the hives started their pollination year in February on almonds in California, traveled across to Florida or Georgia then northwards pollinating a variety of crops along the way including melons, cucumbers, highbush blueberries, apples, peaches and more. Some follow their beekeepers home to Vermont or New York. Many hives will truck on towards the Dakotas, aka honey country for a brief pause in their migration. A few thousand will make a final stop in the cranberry bogs of Massachusetts.

The bees have done good work and now it's time for sun, water, and wind to do the rest.

Sources:

"Wild Blueberry Culture in Maine" UMaine Cooperative Extension.

<https://extension.umaine.edu/blueberries/factsheets/production/wild-blueberry-culture-in-maine/>

THE Jen Lund Pest and Disease book

Thanks to Jen for letting me have this incredible first experience with a migratory operation, and for fact-checking all that I soaked up. Thanks to Siri, my main editor and to Jane and Judith for encouraging me to share this reflection. There are so many other incredible moments that couldn't quite be forced in here; from finding a beautiful black widow mama between some of the migratory boxes to Jen's unfailing admiration of every fine looking queen we encountered (amen).

Photos courtesy of Thalaasa Raasch



Kennebec Beekeepers Association in Augusta welcomed special guest speaker Carol Armatis to our June open hive and potluck on June 13th. Carol's topic for the lecture was "Rearing Queens in Maine", how to be sustainable and grow your own from winter hardy stock. Carol, who owns 3B Apiary in Newport, has been raising Maine bred queens for many years. Carol started keeping bees in the 90s in Caribou, learning all she could about queens. In 2000 she started queen rearing and making nucs for her own use. In 2009 Carol discovered Russian bees and has been breeding them for stock and sustainability, selling queens and nucs. Her two and a half hour talk focused on what you need to know and how to start the process of using your apiary for successful queen rearing. It was the perfect day for opening hives and checking out the club's queens performance.



Carol evaluated five of our hives and reported they are all doing well. She gave great pointers for overwintering and how we can produce new queens for next year. Afterwards we had a potluck lunch, lots of good food and good company.



Our July meeting was "Show and Tell" where folks brought in their homemade bee equipment or products purchased that made life in the bee yard work better. Curt researched how to build a bee vacuum and made one with his own modifications. Paul has been making and selling his version of the popular oxalic acid vaporizer. He also brought in an extractor he made from a rain barrel. Vinny and Travis showed off their portable bee caddy, which works as a nuc, smoker holder, and equipment holdall. There are some fantastic crafters/engineers/designers in the club.

With the start of the KBA Book Club, members will have the opportunity to choose a book to read and discuss at our October meeting. Books on the list include "Honey Bee Democracy" by Tom Seeley, "Bee People and the Bugs They Love" by Frank Mortimer, and "The Bees" by Laline Paull among others. So many great books to look forward to reading!

You can find us on facebook at Kennebec Beekeepers Association and feel free to join our meetings at Vile Arboretum the second Thursday of the month.



Bee Related Insomnia

by Jane Dunstan

When I finally sit down in the evening for even a few moments, in no time my eyelids become heavy and the nodding off begins, only to wake myself up with the realization that there is nothing meaningful that can be done in this state...so I should just go to bed. One would think that as soon as my head hits the pillow, sleep would ensue until dawn. Not so. In short order, I am awake...like wide awake. At 2:05 AM!! Really?? When I wake, my thoughts are not on work, or the farm or routine matters of life. I am thinking about bees. These incredibly sophisticated insects, whose brain is the size of a sesame seed, do things which I don't always understand...or appreciate. Beekeeping is no doubt one of the hardest things I have involved myself with. Why? It's hard because it is as complex as the insect.

Of all the seasons of beekeeping, summer into fall is perhaps the most stressful for me as so much can go so wrong in a blink of an eye. Mite counts that were zero two weeks ago can increase drastically necessitating treatment. The months of little rain become cumulative and soon nectar flows dwindle or cease to exist, wreaking havoc in the colonies. Hives at an inspection 10 to 14 days prior present altogether differently today. Supersedure cells erupt in hives which have been rock solid with brood, population and pattern. Hives with ample room and no evidence of brood congestion become nectar bound. Queens go missing. Docile and normally easy-to-work-with bees become very testy and challenging during inspections. We are very much at the mercy of our environment and climate and bees *act* and *react* to both of them, sometimes in ways which we would not anticipate. The longer I keep bees, the more I realize that there is nothing "typical" about beekeeping.

It is not a prescriptive hobby meaning when this happens, you do this and when that happens, you do that. Beekeeping is truly an art and science that is refined year after year. Critical thinking goes hand in hand with assessment of a number of different variables which may play a part in the scenario. Those variables are sometimes evaluated singly and other times, in conjunction with one another in considering the situation at hand.

So let's look at some of the issues that seem to pry my eyelids open at night.

-Why are ALL the post-solstice nucs superceding the new bred queens which were placed 24 hours after the nucs were made?

-Why are some colonies filling every available cell with nectar and other colonies of similar size and population barely have two frames full of nectar on the outside edges in each box?

-Why do some colonies act like it's late August, shutting the queen down in the top box yet permit space for brood rearing in the bottom box in deep colonies and the bottom two boxes in medium configurations?

-Where are we with dearth? Has there been enough rain to resurrect the flowers and shrubs which yield plentiful nectar?

-Will there be a second nectar flow come late summer/early fall and how will that affect the typical explosion of mite counts during that time period?

-Despite having multiple supers full of capped and uncapped honey, why do a few frames with wax foundation interspersed in the colony remain undrawn?

-Why are some colonies prone to throwing up queen cups everywhere yet others are jammed packed with bees and NO queen cups anywhere?

-In trying to keep to short inspections given the temperature and risk of robbing, how can I refine my inspections to be targeted and less bothersome to the bees during this month?

-Will I be able to get the Formic Pro on hives (if dictated by results of alcohol

washes) in a cooler weather stretch before the first of August in preparation for winter bees?

-Why are a few nucs made this year struggling still despite adding additional resources such as bees and open frames for brood expansion? They seem to be suspended in time.

The list goes on. I stopped taking the sectioned notebook upstairs with me because you guessed it; I will turn the light on and peruse my notes trying to find answers in the wee hours of the morning. Yet in some profound way, I come to realize that bees know better than I do about most things concerning them. While I can manage them to the very best of my ability, there are simply things that they will do that defy explanation or reason from a human perspective. The take away message as I prepare to turn off the light in hopes of getting a few winks before daybreak, is that my job is to help facilitate their existence and survival...by performing alcohol washes on a regular basis, treating for mites, eliminating congestion in the brood nest and in the late summer/early fall, creating the healthiest environment for newly emerged winter bees who will advance the colony into the cold winter months and ultimately spring. This incredible superorganism with its group intelligence is completely equipped to work things out in a beneficial manner for themselves as a colony. While we may never know the why behind their actions or decisions, we can rest assured that they've got this all wrapped up.

Sweet dreams...



Tips and Tricks

by Jason Peters

Smoker Safety

How to avert a disaster:

Being a Firefighter for over 20 years, I have seen first-hand the destruction that fire can have to structures, vehicles, land and lives. Brush fires often being the most difficult to extinguish due to weather conditions and lack of available resources to put them out. Help avert a disaster by following a few key tips and carrying your smoker in a fireproof box or metal pail. I use a six Gallon Galvanized Steel pail with a locking lid to hold my smoker when working my bees or when transporting it to and from my out-yards. These are also a great way to transport ashes and embers from your



fireplace/woodstove during the winter months. They are available from many local retailers as well as online for around \$15.00. Ammo Cans are also great for this and can be found at surplus stores and often at garage sales.

Some Key Tips:

- never leave a lit smoker unattended
- do not place your smoker on or near dry/combustible surfaces or materials

- dump all smoker residue into a pail with water when finished using it
- don't empty ash onto the ground – hot, dry, windy conditions can ignite ashes quickly
- a smoker with a heat shield can help prevent burns to your bee suit and skin
- have a source of water and/or a fire extinguisher nearby and know how to use them
- carry your smoker in a metal container

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Ask A Master Beekeeper...

I would like to begin marking my queens. How do I become comfortable handling her without risk of injury? Would you offer several suggestions on both how to become comfortable handling a queen and the best way to mark her?

Getting comfortable handling queens means learning to work bees gloveless. That is easiest when the bees are on a nectar flow. You can practice handling drones (they don't have stingers) and marking them with color other than the current queen color. While some people use a blade of grass and Testor's Enamel paint, I am more comfortable with a paint pen (acrylic).

Hold the queen by the legs. If you don't like the idea of working bees gloveless, you can use one of the plunger and foam type marking tubes or a round, push-in cage. The keys are not squishing the queen and getting the queen's thorax in the right place to mark. The Testor's paint takes a moment or two to dry. *Andrew Dewey, Master Beekeeper*

What are some key management strategies with overwintered nucs that were created in the summer? What should I be looking for come September? How are they overwintered? Nuc on top of nuc? Side by side? Over an existing deep with a screened double nuc bottom board?

Overwintering nucs in Maine is a relatively recent common endeavor; there are many ways to make them up and successfully overwinter them. It is complicated by new methods regularly being tested and talked about.

My method is called six over six. I use a Lyson six frame nuc and let it grow into two deep six frame nuc boxes for winter. Single deeps regularly overwinter in Maine; my nucs go into winter with 12 deep frames. Feeding in the fall is really the only thing I do. (The Lyson nucs are made of polystyrene, thus already insulated.) I do

not place them over other colonies. I sometimes push them together for winter. In the past I have used the two four-frame nucs in a converted deep (the Michael Palmer method) with additional four frame nuc boxes on top as needed. I've had more success with my current practice.

The bee population in an overwintered nuc snowballs in the spring, and swarming is a concern. I get them into full-size equipment as soon as possible. *Andrew Dewey, Master Beekeeper*

When sampling for varroa mites, do you sample each colony in your apiary or a percentage of colonies in the same yard?

If I were to follow all of my plans, every colony would be alcohol washed monthly through bee season. But, unfortunately, I dream big, but am lazy.

30-40% of my colonies are tested for mites monthly (and Nosema) as part of the Bee Informed Partnership's Sentinel Apiary program. In addition, new colonies (packages, nucs, swarms) coming into the apiary are tested and treated as appropriate.

I'm working at better reading sticky boards so monitoring can continue year round! *Andrew Dewey, Master Beekeeper*



August 12, 2021 at 7:00 pm. Jennifer Lund will be speaking about fall challenges relating to treatment of varroa.

September 15, 2021 at 7:00 pm. "A Beekeeping Smorgasbord" with Karen Thurlow. More details to follow!

VARROA: FIGHT THE MITE

by Jane Dunstan

In this month's column, we will examine one aspect of **Fight The Mite: Find frames with open brood for an accurate alcohol wash sampling.**

Utilizing the correct technique and selecting appropriate frames for use in an alcohol wash is imperative for accurate results.

When considering the behavior and movement of varroa mites in the colony, it is best understood by examining the specific phases of mite activity. The first phase is called the **dispersal phase** which describes how varroa mites move within the colony as well as how they disperse themselves to other colonies. Within the colony itself, bees are in close proximity to each other whether walking on frames, flying in and out or executing routine activities of the hive. When an adult bee emerges from its brood cell, the original female mite and subsequent daughters either leave the cell by attaching themselves to bees walking by, or remain on the emerging host bee and nestle between the abdominal plates/segments of the bee, piercing the exoskeleton and ingesting the important fat

body of the bee. As bees brush past each other, female mites are distributed within the colony. Mites infest other colonies by the process of drift. The length of the dispersal period with brood present in the colony is 4.5 to 11 days and in the absence of brood, as long as five to six months. The **reproductive phase** occurs inside the capped cell when the female mite enters a cell which is about to be capped and submerges herself in the brood food beneath the larvae. The first egg is unfertilized which develops into a male mite which she mates with to produce more female offspring. The female mite and immature offspring feed upon the bee as it matures in the cell.

The highest infestation rate by varroa mites are with the young nurse bees caring for the brood.

Mites in the dispersal phase tend to congregate in areas where bees are caring for open brood in hopes of entering the cell before it is capped. Selecting your alcohol sample from this population of bees will help to maintain accuracy of the test which is crucial to successful colony management.

Once you have found your queen so as not to include her in the sample, collect a half cup of bees and gently swirl them in a container with the release agent of choice for two minutes prior to shaking and

counting the presence of mites. The liquid can be strained and reused. Interpreting the results is equally as important as conducting the sample. Mite levels are referred to as mites per 100 bees or percent infestation. Roughly 300 bees are contained in a half cup. To determine the percent infestation, divide the total number of mites found in the alcohol wash by three.

An updated brochure from Northeastern IPM Center is now available and can be downloaded as a PDF from <https://www.northeastipm.org/neipm/assets/File/Publications/IPM-for-Varroa-Mites-2020.pdf>. The brochure outlines how to perform an alcohol wash and identifies miticides to be used when mite levels exceed threshold. In addition, The Varroa Management Decision Tool is an excellent algorithmic resource for determining what miticides could be used when mite levels exceed threshold. Specific choice of treatment is dependent upon colony phase, whether brood is present and if honey supers are on the hives. Acceptable thresholds are 1-2% where further control is not needed. **However, with thresholds greater than 2%, intervention targeted at reducing the threshold should begin immediately.**

Visit https://cantilever-instruction.com/varroatool/story_html5.html

SAMPLE REGULARLY (EVERY MONTH!)

Alcohol wash

The most accurate way to determine Varroa levels in your hives

MATERIALS

- 1/2 cup (120 ml) of 95% ethanol
- 1/2 cup (120 ml) of 95% ethanol
- 1/2 cup (120 ml) of 95% ethanol

10 STEPS

- 1) Place alcohol into jar. Set materials in easy reach
- 2) Find a frame of open brood. Check that the queen is not on frame!
- 3) Shake adult bees from frame into dishpan. Scoop 1/2 cup (~300) bees and pour into jar
- 4) Shake remaining bees from bin into colony
- 5) Seal solid lid on jar and shake for 1-2 min
- 6) Let jar sit for 1-2 minutes
- 7) Replace solid lid with mesh lid
- 8) Shake jar contents into empty dishpan
- 9) Count the total # mites. If there are > 1, it is time to apply a chemical treatment (see inside of brochure)
- 10) Discard bees and mites. Wash all materials; can reuse alcohol.

→ email jedunstan@mainebeekeepers.org for a free kit!

KNOW YOUR PEST

Meet the **Varroa mite**...

The Varroa Mite, Varroa destructor, is an external parasite that feeds on honey bee adults and brood. They weaken bees and transmit viruses.

Unmonitored and unmanaged infestations of Varroa mites will result in colony death.

COMMON SIGNS OF MITE DAMAGE:

- Open or damaged pupal cells
- Chewed-down pupae
- Emerging adult bees with deformed or missing wings

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Integrated Pest Management (IPM) for Varroa mites

IPM is a decades-old farm strategy for mitigating pests while minimizing chemical use. Experts now recommend IPM for Varroa.

Rather than relying on a "silver bullet", good IPM incorporates **multiple practices** throughout the season, based on **pest levels** and **pest biology**.

IPM PRINCIPLES:

- **KNOW YOUR PEST**
- **PREVENT** pest build up using non-chemical practices
- **SAMPLE REGULARLY** to track pest population levels
- **INTERVENE** with practices when populations reach damaging thresholds (use products to prevent pest increase)

This pamphlet will help you to use IPM principles to manage Varroa mites.

PREVENT PEST BUILD UP USING NON-CHEMICAL PRACTICES

SPRING AND SUMMER

- Re-Queen**: Select mite resistant stock when available
- Brood Interruption**: Split hives or allow to swarm (capture swarm)
- Drone Brood Trapping/Removal**: Insert foundation-less or drone frame

ALL YEAR

- Screened Bottom Board**: Check mite drop for effectiveness

CHEMICAL TYPES:

- Synthetic**: Pesticides that kill bees by disrupting their nervous system
- Organic**: Pesticides that kill bees by disrupting their metabolism

PERSONAL PROTECTIVE EQUIPMENT (PPE):

- Chemical resistant gloves
- Safety goggles
- Respirator with an organic particulate filter

INTERVENE W/ PESTICIDES WHEN PESTS EXCEED THRESHOLDS (>3 MITES/SAMPLE!)

Name	Active ingredient (mode of action)	Season (temp)	Honey super safe?	Treatment Duration	Application Type	Personal Protective Equipment
Apivar® (Amitraz)	Synthetic	Pre-bloom (late winter/early spring)	NO	6-8 weeks	PLASTIC STRIP	Respirator, gloves, goggles, full protective suit
ApiGuard® (Phthalophthalimide)	Synthetic	Pre-bloom (late winter/early spring)	NO	4-6 weeks	GEL OR GEL TUBE	Respirator, gloves, goggles, full protective suit
Api Life Var® (Phthalophthalimide, malathion, coumaphos)	Organic + synthetic	Pre-bloom (late winter/early spring)	NO	26-32 days	FOAM WATER	Respirator, gloves, goggles, full protective suit
MAQS® (Malathion)	Organic	Pre-bloom (late winter/early spring)	YES	1-3 weeks	GEL STRIP	Respirator, gloves, goggles, full protective suit
Formic Pro® (Formic acid)	Organic	Pre-bloom (late winter/early spring)	YES	2-3 weeks	GEL STRIP	Respirator, gloves, goggles, full protective suit
Oxalic Acid (Oxalic acid)	Organic	Pre-bloom (late winter/early spring)	NO	Immediate	POWDER, 3 SPRAYS	Respirator, gloves, goggles, full protective suit
Api-Bioxal® (Oxalic acid)	Organic	Pre-bloom (late winter/early spring)	NO	Immediate	POWDER, 3 SPRAYS	Respirator, gloves, goggles, full protective suit
HopGuard V/VR® (Pyrethrin)	Organic	Pre-bloom (late winter/early spring)	YES	1 month	CARDBOARD STRIP	Respirator, gloves, goggles, full protective suit

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