

The Bee Line



Newsletter of the Maine State Beekeepers Association | mainebeekeepers.org

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Honey Bee Health Research at the USDA-ARS Bee Research Laboratory Beltsville, MD

by Dr. Jay Evans

Honey bees are remarkably resilient to stresses ranging from temperature swings to bears, but they are not invincible. In fact, almost half of all bee colonies in the U.S. succumb and are replaced annually, for both backyard beekeepers and the largest commercial beekeepers (www.beeinformed.org). At the USDA-ARS Bee Research Laboratory, our job is to find out why things fall apart in honey bee colonies due to chemical stress, food stress, and disease. We then hope to identify fixes for those problems. Some of our research is highlighted at the USDA website

<https://www.ars.usda.gov/northeast-area/beltsville-md-barc/beltsville-agricultural-research-center/bee-research-laboratory/>. You can also scan more recent efforts by USDA scientists by searching their names in 'Google Scholar'.

In our laboratory, Dr. Judy Chen and myself are focused on pathogens and parasites of honey bees, ranging from nosema to viruses, brood disease, and gut parasites. My main research focus right now is on new medicines for honey bee disease. We've looked at about 60 natural products that are possible candidates as antiviral or anti-nosema treatments, and a bit at the gut microbiome with respect to probiotics and impacts of antibiotics on bee health. We have one candidate in field trials this summer and plan, now that we are getting back to the lab, to screen 200 more in the next six months.

Dr. Chen is a world expert on viruses and she is studying the immune responses of honey bees to these viruses and how we might be able to assist that immune response to make them more resilient. She is also an expert for nosema and has made some really neat discoveries this year on how nosema takes minerals from honey bees as part of its parasitizing behavior. One output of this research is a possible treatment to block iron uptake routes used by nosema. Judy's group also found a really interesting food-grade (safe) compound called cyclodextrin that shows promise both for reducing the stress of pesticides and for

reducing virus levels. We are super excited about that discovery and working to get it tested more extensively in the field. Judy has also stepped up as the Acting Research Leader for the Bee Lab, a job that requires becoming an accountant, navigating government policies and human resources skills, and a continued attention to one's research.

Dr. Miguel Corona is an expert on honey bee nutrition and physiology. He has looked at protein supplements in honey bees and the impacts of protein deficits on bee health with the goal to improve diet supplements for bees and also to help beekeepers know which forage is best for their colonies. He's also looked at agricultural chemicals and disease, and how these interact to impact honey bee health. His focus is on nurse bees and foragers and especially on how nurse bees grow and develop into effective and long-lived foragers.

Dr. Mohammed Alburaki is the newest scientist in the laboratory. His strength is in colony-level metrics such as looking at the genetics of colonies and queen and worker health in a colony setting. He's studied pesticide impacts on colony health and the impacts of different bee genetic lineages and is trying to integrate that into a view of how particular bees deal with stress. His work on queen health also includes elements of drone health and mating success by drones.

Dr. Steven Cook is involved in a large project looking for the next safe treatment for varroa mites. He has pulled together a team of university researchers, and also interacts with regulators and industry



Garden photo courtesy of Dr. Jay Evans

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President's Message



Would you like to expand the number of colonies you keep but don't have a large enough property to accommodate them? Is your yard very shady? Do you want to make splits without losing field bees who return to the parent hive? Are other beekeepers creating "mite bombs" in your neighborhood? If the answer is yes to any of those questions then maybe you should consider acquiring an outyard.

I got my first hives while living in a village of old houses with small yards situated cheek by jowl. Best practices indicated I should have two colonies at the most, which was more than enough little mischief-makers. While I was able to lure the bees away from a swimming pool next door, I couldn't deter them from flying over the adjacent boatyard where they decorated gleaming white boat topsides with yellow polka dots.

When a friend who lived a few miles away on several rural acres asked if I could put some hives in her fields I quickly agreed, pleased to have somewhere to expand my apiary. I could work in peace, not having to worry about my bees' disregard for social niceties. Despite eventually buying a larger property, I have remained an "outyard" beekeeper ever since.

Over the past eleven years I've kept bees in eight different locations along an eight mile stretch of a state road. All have the most important requirements: ponds for fresh water, sunny situations with a southeastern exposure, excellent forage consisting mostly of wildflowers, the ability to drive right up to the apiary and decent wind protection. Some of these spots turned out not to be so ideal: a farm where the cattle got loose and knocked over hives on a few occasions (usually in the dead of winter); a

property occupied in the summer by a bevy of grandchildren whose favorite activity was spending hours in a climbing tree that happened to be next to the hives; and during the peak of browntail moth infestation, larvae sporting poisonous hairs rained down on me as I inspected bees underneath a huge oak tree. But the overall experience has been wonderful – usually it's just me and the bees in complete isolation in a beautiful meadow. I highly recommend having an outyard, or two or three.

How do you find such a location? After moving to my current home I placed an ad in a small local newspaper, offering honey in exchange for honey bee abodes. To my surprise offers came streaming in. I initially screened over the phone, finding that many were beyond the range I wanted to travel; a lot were wooded; some were on too-small properties. There were a few potential candidates, but news of the search spread and I was given names of others. Since then all of my outyards have been acquired through word of mouth and I am constantly offered new locations. Sometimes it's best to just ask around. Check with garden clubs, or put a card on bulletin boards in libraries, churches or shops. I've used Google satellite maps to identify possibilities (you can spot fields and ponds) then found out who the owner was and contacted them. (It helps to have a friend who is a local realtor.) We often get inquiries through MSBA's website from people looking for someone to keep bees on their property; these get forwarded to chapter reps. Many landowners just want to "help the bees" or are seeking pollination of their gardens and orchards. Others like the idea of having bees but not taking care of them – one of my owners says he enjoys telling his friends that they're his hives.

Once you've found an outyard, discuss arrangements and expectations, such as offering honey as "rent." Some beekeepers trade one pound of honey per colony but there's no set rule. If there is a black bear presence be sure to mention that you'll be

setting up an electric fence. Ask if you can mount swarm traps on the property. Find out if the landowner uses pesticides for fruit trees or winter moths or brown tail moths. If you live in an active agricultural area try to find out where pesticides may be used or sprayed. You may want to print and sign an agreement – I have never done so, but always do whatever I can to keep the bee landlords happy. It's important to employ best practices as a representative of the beekeeping community.

Outyard beekeeping is a bit more complicated than walking out your back door. You have to come equipped with not only the items you know you need, but lots of extra ones that you MAY need. I've had to close up hives and run back home many times to get an unanticipated tool or frames or the smoker I forgot to bring. Making a list and checking it off is extremely helpful.

There's one caveat: I wouldn't advise most entry-level beekeepers to start off with outyards unless it's the only way you can find to keep bees. Maybe you live in an apartment/condo, or have a family member who's allergic to bee venom. Those who are starting out need to do regular inspections and frequent observations of hive behavior to learn about things like robbing and swarming. It's enough of a challenge without having to travel with your beekeeping gear and equipment to a remote location. You can't forget about a hive in your backyard but out of sight in an outyard can mean out of mind.

Judith Stanton



*Land of milk and honey...
Photo courtesy of Judith Stanton*

Helping Honey Bees and Other Pollinators Meet Their Nutritional Needs

(While providing benefits for their keepers, too)

by Ed Szymanski

With Earth Day having passed and World Bee Day celebrated, what better time is there to think about providing good food for our beloved honey bees? And in the process, we can also provide nutrition for a variety of other pollinators. Bees and flowers have a special relationship.

Bees need plants for food; pollen provides proteins to support development of brood into healthy adults and helps the bees build the strong fat bodies they need for winter survival. Nectar gets converted to honey for energy, winter heat generation, and production of brood food. Many flowers need bees to transfer pollen so the plant can reproduce. This directly influences the quantity and quality of many food crops.

There are 10 essential amino acids (proteins) needed for proper development in honey bees. All of those amino acids are not provided by any one flower pollen. This is why monoculture is not the best thing for bees, and in some cases is detrimental to their health and development. Bees need a diverse selection of food sources all through the year. There are usually "wild" food sources available, like trees and wildflowers, but as these sources disappear with ever expanding roadways and housing developments, we need to plant to provide our own food sources for our pollinators.

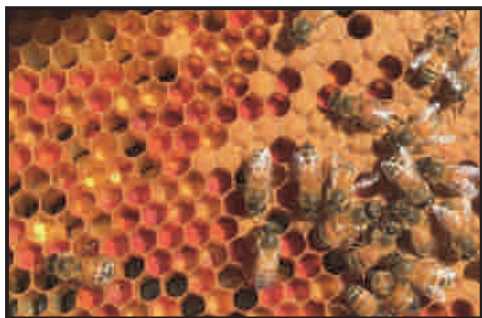


Photo courtesy of Ed Szymanski

What can we do? We can leave areas of our yards more natural to provide habitat for native pollinators. Bees basically relearn how to get nectar and pollen from each plant they visit.



Photo courtesy of Ed Szymanski

We should grow flowers in patches of 10 square feet or more, shrubs, or trees. A diverse selection of flowers blooming over the entire growing season is the goal. As beekeepers, we have a vested interest in a long period of nectar flow. We like a good honey crop for our own use and we also want the bees to have good stores of honey to get them through the winter. As farmers/gardeners, we want to have a large force of foraging bees to pollinate our crops. It is truly a win-win situation for all.



*Honey bee visiting redbud flowers
Photo courtesy of Ed Szymanski*

What to plant? Start with trees. Trees provide large amounts of floral real estate on a relatively small footprint. Willows are a significant early pollen source and maples provide the first real nectar flow in the spring. Different varieties of maple bloom at slightly different times, so there's good early food available for the first few weeks of spring. Later in spring, redbuds and fruit trees such as peach, pear, and cherry are strong food sources for honey bees. Black locust and linden are significant early-summer nectar sources. Beebee tree (*Evodia*) and seven-son flower tree are later-blooming favorites.

Trees can take many years to develop into significant sources of nutrition for pollinators, so a quicker way to make a good number of flowers available is with shrubs. Witch hazels are a wonderful example. With a few different species, witch hazels are often both the earliest and latest food sources available to bees. There may be snow on the ground covering the early spring bulbs, but as long as it's warm enough for bees to fly, there's witch hazel pollen available above the surface of the snow. Sumacs (smooth and staghorn) are a great early summer nectar source and clethra (aka sweet pepperbush) is a honey bee favorite in damp areas. Some parts of Massachusetts realize the greatest nectar flows of the season during the clethra bloom.

DiPasquale et al (2013) found that one of the most nutritionally complete pollens is that of the *Rubus* family, what we know as brambles. Planting blackberries and raspberries is a great way to provide healthy food to both bees and humans. We grow several varieties of brambles in our garden to supply bee food from May to August and fruits from July to October. The flowers of the blackberry are particularly attractive, resembling wild roses. Other berries, such as currants, gooseberries, and blueberries also provide pollen and nectar to pollinators and fruit to people.



*Blackberry flowers are a garden accent.
Photo by Ed Szymanski*

Spring bulbs can provide early pollen just as brood rearing is starting. We recently discovered Pushkinia, or striped squill (not Siberian squill) and planted a quantity of the bulbs. They started blooming mid-March and provided pollen for two weeks. We'll be getting more.

Grape hyacinths bloom from mid-April into May and provide both pollen and nectar. Other significant spring bulbs are crocus, snowdrops, and chionodoxa (Glory-of-the Snow).



*Grape hyacinths provide early pollen and nectar.
Photo by Ed Szymanski*

How about herbs? People have been using herbs in cooking and in healing for centuries, and there's a lot of recent research that suggests that herb plants provide health benefits to bees through their pollen and nectar. Erler and Moritz (2016) found that honey bees selectively forage based on antimicrobial qualities when they are needed, and that they selectively feed nectar and bee bread from herbs to diseased larvae. Aromatic herbs like mints and borage are rich in beneficial nectar. Mint, thyme and a few other herbs produce

secondary metabolites that have shown to be antimicrobial and may be effective against European Foulbrood and other bacteria-associated diseases. Ashley Adamant, in her blog *Practical Self Reliance*, wrote "when you grow herbs, you help the bees and heal yourself." Oregano, chives, garlic chives, basil, anise hyssop, and calendula are other examples of herbs pollinators are attracted to. Echinacea has long been known to have many healing benefits for humans. Bees and butterflies love the flowers during their long summer bloom time. You would think that these flowers provide beneficial pollen to these pollinators as well.



*Honey bees love thyme
Photo courtesy of Ed Szymanski*

And then there are flowers. There are so many, it's hard to narrow down to a few favorites. Sunflowers have been shown to provide healing compounds to many species of bees. It is said that bees will forage on sunflowers when they know that they are ailing, a sort of self medication. Milkweeds are a favorite of honey bees; they forage for nectar on them in the late afternoon. Most importantly, milkweeds are a larval host plant for monarch butterflies. Ironweed and Culver's root are great native pollinator plants. Veronica, poppy and mountain mint are staples in our summer gardens. Mountain mint is particularly loved by honey bees, and being in the mint family, likely provides health benefits. Sedum, aster, goldenrod, and wingstem are great fall bee plants. Coming in when pollen and nectar sources are on the decrease, these

plants provide much-needed nutrition for winter preparations.



*Echinaceas come in many colors
Photo courtesy of Ed Szymanski*

By providing a diverse selection of high quality food plants for your bees and other pollinators, you can help to ensure that they are always getting the nutrition they need to raise strong, healthy young; to reduce the stresses caused by viruses and pesticides; and to give them a fighting chance of survival through our harsh winters.



*Monarch butterfly on swamp milkweed
Photo courtesy of Ed Szymanski*

Ed Szymanski is a homesteader who also runs a computer repair business in Franklin, Mass. He and his wife Marian take care of bees, chickens, and a lot of fruits, vegetables, and flowers on an acre-plus lot devoid of lawn. Ed and Marian speak to bee clubs and garden clubs about planting for pollinators. Ed has been President of Norfolk County Beekeepers Association and is currently serving as NCBA Intermediate Bee School Director and instructor as well as Program Director for both NCBA and Rhode Island Beekeepers Association.

So You Think You Want To Be A Beekeeper...

*Reprinted with permission
by Ed Colby*

So you want to be a beekeeper! You'll do your part to save the bees, and you'll have honey on your toast every morning, right?

My name is Ed Colby. I'm the president of the Colorado State Beekeepers Association (2016-2020) and a longtime columnist for Bee Culture magazine. Now take a deep breath, please, because before you get started. I have some good news, and I have some bad news.

First, the bad news: There is nothing on Earth easier than failing at beekeeping. By "failing" I mean allowing your bees to die.

Beekeeping requires some fundamental knowledge about honey bees and how to care for them. Short of working for a commercial beekeeper, the best first step for a beginner is to take a course taught by a competent teacher. In Colorado, lots of regional bee clubs, plus universities like Montana State and Penn State, teach such courses, either in-person or online. But a little education still isn't going to be enough to get your bees through their first year. Beekeeping requires time-consuming dedication. Getting bees is not like getting a kitten. If your bees are to live and thrive, you're going to have to do some work. In the summer this means checking on your bees every 10-14 days. You might like to take vacations, but your bees do not. If you place a hive in your backyard and don't take care of it, you're not "saving the bees." You're killing them because parasitic Varroa mites will eat them alive, creating wounds that vector the transmission of deadly viruses.

Varroa mites are an invasive species relatively new to the United States. All bee hives in the U.S. harbor them. These reddish, pinhead-sized critters normally attach themselves to the undersides of adult bees, so they're pretty hard to spot. There are ways to determine if mite populations have reached levels that threaten the health of the hive, but they are time-consuming and require not only education but a can-do determination on the part of the beekeeper. None of this is easy.

Left unchecked, Varroa mite infestations normally peak in the fall, when mite numbers continue to grow, just as a honey bee colony reduces its bee population in preparation for winter. In other words, the ratio of mites to bees increases. The colony now likely succumbs to one or more viruses. As its mite-ridden bee population dwindles, opportunistic bees from neighboring hives raid the collapsing colony, feasting on honey and picking up hitchhiking mites that they bring back to their own hive.

You as a fledgling beekeeper will be forced to make a conscious or unconscious choice. Do nothing to reduce the mite population in your hives, and your bees will likely not make it through their first winter. Even if your colony is headed by an extraordinary queen who imparts above-average mite resistance to her workers, its being "Varroa bombed" by collapsing mite-ridden hives in your neighborhood can and likely will, seal its doom.

Your other option is to use formic and oxalic acids, thymol, hops derivatives, synthetic chemicals, or even mechanical means to kill mites. It can be a messy business. Some treatments are more effective than others. Some work only at certain times of the year. You need to be careful not to contaminate the honey. All of this costs time and money.

You can search for queens that impart a level of mite resistance to their offspring, but I recommend you get a little experience

before you tackle this. The thing to remember is that sooner, not later, you will surely face serious challenges from mites, and a failure on your part to act on behalf of your bees can spell curtains for the innocent creatures in your charge. Some people consider this animal abuse.

You don't like the sound of this, do you? I don't like it either. If your passion to keep bees is anything short of red-hot, and you still want to help pollinators, maybe there's a better path for you. You could plant a bee-friendly garden, or advocate for stronger pesticide restrictions, or join an environmental organization devoted to pollinators, like the Xerces Society. You can help bees without owning any.

For those of you still determined to keep bees there is, however, some good news. If you're willing to commit yourself, you can thread the needle and learn to keep your bees alive. It will be more work than you ever imagined. But if — and only if — you have the fire in your belly, you can do it, and CSBA can help.

If you're easily discouraged, you'll never make it, because failure is part of the learning curve. But if you're willing to learn, if you're willing to fall flat on your face and get up and have another go, if bees haunt your daydreams, if you put your heart and soul into this noble craft, you might find you have the right stuff.

The world doesn't need more beekeepers. It needs more good ones.



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Asian Giant Hornet (*Vespa Mandarinia*)

by Jennifer Lund

Distribution

Asian giant hornets (AGH - *Vespa mandarinia*) are native to temperate and tropical eastern Asia. In the fall of 2019, AGH was discovered in two locations in British Columbia, Canada. Shortly after that detection, a nest of AGH was located and destroyed on Vancouver Island, BC. That December, two reports of AGH were verified near Blaine, WA. In 2020, both Washington State and Vancouver Island had new detections of AGH. Last October the Washington State Department Agriculture collected several live specimens. They attached tiny radio transmitters to the live wasps, released them, and followed the signal from the transmitters back to the colony. The colony they located was destroyed. Check out the Washington State Year in Review AGH video: <https://www.youtube.com/watch?v=7j1VeCr uohQ>

DNA evidence showed that the hornets in Washington and Vancouver were unrelated and originated from two different parent populations (South Korea and Japan, respectively). This suggests that there may have been multiple independent introductions of the wasps.

At this time, Asian giant hornets are not known to occur outside of Washington state and Vancouver Island, and are not present in Maine.

Description

Asian giant hornets are the world's largest hornet. They are typically 1.5 - 2 inches in length and have a wingspan of up to three inches. AGH have bright yellow heads, a

black thorax with greyish wings, and yellow and black or brown striped abdomens. AGH typically build their nests underground, usually in abandoned rodent burrows or in dead, hollow trunks/roots of trees in forests. Aerial nests (more than six feet off the ground) are rare.

Life Cycle

Like most social wasps, AGH colonies have an annual life cycle and build new nests every year. An overwintered mated queen emerges early in the spring and searches for a good nesting site. Upon finding an appropriate site, she will build a small paper nest, lay eggs, and provision young with masticated insects. After a few sets of workers emerge, the workers take over rearing young and building the nest, leaving the queen to lay eggs. In the fall, the colony raises new queens and males. The mated queens overwinter in sheltered locations, starting new nests the following spring. The colony dies after the first hard frost in the fall. At its peak, the population of a AGH nest can reach up to 700 individuals.

AGH and Honey Bees

AGH can be a voracious predator of Western honey bees (WHB - *Apis mellifera*) and social wasps late in the season. These types of prey provide a dense, protein rich, easily accessible food source for AGH. A hornet attack on a colony occurs in three phases known as the hunting, the slaughter, and the occupation phases. In the hunting phase, a hornet scout locates and marks the colony with a food-site marking pheromone produced in a gland located on the last abdominal segment. This pheromone recruits additional hornets to the area. After hornets (up to 50) have been recruited to a prey colony, the slaughter phase starts. In this phase, AGH will attack and kill the adult worker bees, dispatching a whole hive within a few hours. Finally, in the occupation phase, hornets occupy the colony and guard the entrance to protect their food source for a week or two following the slaughter phase. They harvest bee brood (chewed into a paste) to feed the hornet larvae back in their nest.

Western honey bees have no defense mechanisms against hornet attacks. This is not the case for the Asian honey bee (AHB - *Apis cerana*). AHB has coevolved with the hornets and has developed several defensive mechanisms and strategies. The hornet's marking pheromone is recognized by AHB and when detected, the AHB colony will emit warning sounds and exhibit warning behaviors (shaking their abdomens and waving their wings). This will sometimes repel the hornet scout before others can be recruited. If the hornet persists, several hundred bees will mass attack the hornet, engulfing it in a ball. The AHB vibrate their flight muscles and heat the hornet to a lethal temperature. The center of the AHB heat ball reaches 117°F and has high levels of carbon dioxide. This temperature is tolerated by the AHB but kills AGH. The AHB colony defense is highly effective in interrupting the AGH hunting phase by eliminating the scout hornet, preventing recruitment and slaughter.

What can you do?

For the past couple of years, the Maine Apiary Program has been monitoring for AGH in Maine through a grant from the U.S. Department of Agriculture Plant Protection Act's Section 7721 program awarded to the Pennsylvania Apiary Program. Baited sentinel traps are placed in various locations around the state. Along with this effort we ask for beekeepers to keep an eye out for AGH, especially from July through September when the wasps are more abundant and active. If you think you see a AGH, try and take a picture of it and submit it to the Exotic Hornet Report Form (<https://www.maine.gov/dacf/php/apiary/hornets/>). Please note: there are several species of native wasps that look a lot like AGH. Some of the more common ones include the pigeon tremex, the Eastern cicada killer and the great golden digger wasp. An excellent Powerpoint on distinguishing AGH from native wasps can be found here: <https://www.maine.gov/dacf/php/apiary/hornets/index.shtml>



EAS 2021 Conference Shepherdsville, KY

Registration for the Eastern Apicultural Society's annual conference is now open to everyone. The conference will take place August 11-13 in Shepherdsville, KY. Attendance is limited to 300 people and COVID safety protocols will be observed.

There will be presentations from Master Beekeepers such as Cindy Bee, John Benham and Kevin Inglin, and Keynote Presentations from Deborah Delaney, Jamie Ellis, Tammy Horn Potter, Juliana Rangel and Kent Williams.

The apiary track topics will include: how to inspect hives, checking for varroa mites with sugar shakes and alcohol washes, brood diseases in the hive, queen considerations (identifying, requeening), how to make splits, sampling to test for *Tropilaelaps* and testing for hygienic qualities.

Time before the conference sessions, short breaks between presentations and an extended lunch break will allow for ample time to visit with vendors and catch up on the latest equipment.

More information is available in the Spring 2021 EAS Journal. If you are an EAS member you will have received your journal by now. If you are not a member, you will need to join before registering for the conference. Here is the website: <http://easternapiculture.org/>.



Remember to register your apiaries by June 15th!



It is a requirement under the Title 7 MSRA, section 2701 to register your apiary with the Maine Department of Agriculture, Conservation and Forestry (DACF). Registration is valid for a twelve-month period expiring in mid-June. If you previously registered your apiaries, you will receive a renewal form by mail. If you have not previously registered your hives, forms can be downloaded from the DACF apiary website (www.maine.gov/dacf/php/apiary). Besides being the law, it is important

for beekeepers to register their apiaries with the State of Maine for several reasons.

- Pesticide Applications: There are rare occasions when pesticides must be applied aerially to control mosquitoes or other public health pests. The Maine State plan for public health emergencies includes consideration for pollinators and contains language that directs the applicator to contact beekeepers in the area so they can take the proper precautions to protect hives. If you are not registered, you may not be contacted.
- Inspections: If your hives are registered with the DACF you can request an inspection of your apiary by a trained apiary inspector.
- Outreach and Education: Registered beekeepers who provide their email address will be included on important updates regarding pests/diseases and educational opportunities.

Continued from page 1

Honey Bee Health Research...

sponsors to find routes for moving research ideas for mite control into licensed and available products for beekeepers. They have several candidates in field trials right now and are hopeful they'll have something safe for beekeepers soon.

We also host the Bee Disease Diagnostic Service, now being managed by Samuel Abban. Sam has trained in bee pathology for over 10 years and has become a trusted



Lab truck with 10 frame boxes.
Photo courtesy of Dr. Jay Evans

expert for American and European foulbrood disease. He checks 1,000 or so brood samples a year for the bacterial agents causing foulbrood, along with chalkbrood, sacbrood and other causes of brood disease. We also receive over 1,000 adult bee samples and those are scored for varroa loads as well as nosema. You can send in samples from ailing or dead hives for free when you have a problem with your honey bee colonies (<https://www.ars.usda.gov/northeast-area/beltsville-md-barc/beltsville-agricultural-research-center/bee-research-laboratory/docs/bee-disease-diagnosis-service/>).

The USDA-ARS Bee Research Laboratory is one of three laboratories focused on honey bees and is joined by several other USDA laboratories that do pollinator research. These other groups have strengths in bee breeding, landscape-level nutrition, and the pollinators in North America in addition to honey bees.

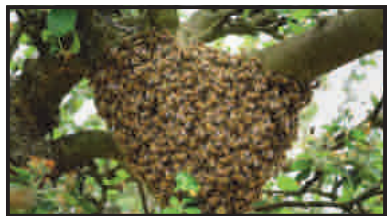
WANTED: Swarm Catchers

by Jane Dunstan

Hmmm...what might a classified ad for swarm catchers look like?

WANTED: Tall individuals with an extension ladder and no fear of heights to capture a swarm of bees...not really. In my early years of beekeeping, I recall thinking the gathering of a swarm was a formidable task. The reality is that recovering a swarm of bees is a pretty easy and fun activity.

There are some necessary supplies needed to make the event safe and successful and all of them can be found in your home or garage. The list is rather short: a bucket, cardboard box or plastic tub to initially gather bees into, white or lightly colored bed sheets, a ladder, loppers and pruners, rope, your bee suit/veil, and a deep box or two medium boxes with frames and undrawn foundation (or a few frames of used drawn foundation), bottom board, inner cover and telescoping cover for their final destination.



SAFETY FIRST. It is *really important* and wise to assess scene safety. The swarm that alights 30 feet in a tree with branches extending around power lines is a swarm you should bid farewell to. Although they may soon be gone from your sight, the reality is that they won't be far away and will surely return to rob your apiary in the fall as untreated and unwelcomed visitors. That is the downside to being unable to capture a swarm. Not only do you lose bees and perhaps a favored queen, but they are often the mechanism by which mite bombs occur in your apiary.

Following are basic suggestions for gathering a swarm when that beautiful drooping cone of bees is safely accessible to you.

-Have a plan. Formulate in your mind first how you are going to approach the task. Gather your supplies and bring them to the swarm's location so you aren't running back and forth.

-Don your veil or suit. While swarms are extremely docile as they have no home to protect, there is no need to risk being stung in the process.

-Spread white or lightly colored sheets directly under the hanging swarm if they are located on a branch or limb off the ground and out of your reach.

-Rope is a faithful friend. If swarms are located close to the end of a limb or branch, throw a rope over the limb to pull it downward within reach. With an abrupt downward yank of the branch tip, dislodge the swarm from its locale. If unable to reach the branch, utilize the same technique of an abrupt yank of the rope and the swarm may gracefully drop into the container you have placed on top of the white sheet which has been carefully spread out in the expected area of landfall. Not all the bees will fall into the box or tub however if the queen falls along with the teardrop of bees and lands in the box, the other bees will soon join her.

There are times when the mass of bees drop but the queen remains at the original location tucked in a small huddle of bees. You will soon recognize that scenario when all those beautiful bees who gracefully fell into your box begin flying back to the original cluster site. Fear not. The next option to gather them is equally as easy.

-Rope and another person. Throw that rope back over that limb (hammers serve as an awesome throwing weight tied to the end of your rope to advance it over the branch.

This time you are attempting to depress the branch so it comes within the reach of your assistant swarm catcher. Once the branch is held, either cosmetically lop off the branch near to the swarm and place it directly into your hive body with frames OR lift a cardboard box or tub up to the swarm

and dislodge the bees directly into the box. It may be necessary to carefully scrape off any remaining bees prior to releasing the branch.

-Empty the box carton or tub of bees into your equipment filled with undrawn foundation with a frame or two of older dark comb.

-Place hived swarm in its desired location and begin feeding 1:1 sugar syrup.

The easiest swarm I ever recall retrieving was one that returned on its own. This is not common place but a treat when it occurs as it was an opportunity to intervene and prevent it from swarming with any subsequent attempts. Fortunately for me the departure of bees was audible and witnessed. In a whirlwind they traveled over the garden, down the embankment toward the vernal stream, where they lit on a low branch of an apple tree and began to cluster. Confident that they could be collected, items previously discussed were collected, bee suit was donned and off I went to the apple tree. Upon arrival however, there was little if any appreciable cluster, which was perplexing. As I headed back toward the parent hive the initial sight took me by surprise. The hive was covered with bees but most striking were the bees on the ground, marching like an army to the hive, up the cement blocks, under the landing board and then resurfaced on top where they continued their procession into the entrance of the hive. The failed swarm attempt was the result of the queen who either did not leave as prompted or was unable to fly a distance and returned to the hive. What a gift! Now there was ample time to split that hive after all the bees entered and regrouped. Despite looking twice through the hive for that trimmed down, svelte queen, she alluded me. Without agonizing over the decision of which split should relocate to another area, I simply grabbed the hive body closest to me at that moment and carried it to the opposite end of the property. Neither split swarmed after that quick hive makeover and relocation, and both hives were queenright shortly after the foiled escape.

Tips and Tricks

by Jason Peters

One of the greatest tools that I have found to help save a lot of effort when working in my bee yards is an aluminum work platform. I use this platform whenever I am removing heavy boxes to perform basic inspections, adding escape boards to clear honey supers, making up nucleus colonies and when I am setting up my cell builder colonies each week prior to setting my grafts. The one that I use is a lightweight Werner Aluminum Work Platform which is available at most home improvement stores like Lowes and Home Depot for around \$50.00. Your back will thank you!

There is a great video from Paul Kelly at the University of Guelph in Ontario on how to safely tip hives using one of these platforms.



Photo courtesy of Jason Peters



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Ask A Master Beekeeper...

Every spring clean-up I take out some frames with pollen that the bees have not gotten around to using. By now they're bringing in fresh pollen, which I expect they much prefer. But I hate to waste all the labor and pollen that is left over. What do you do with these frames? Do you do something different if they come out of a dead out vs. a colony that made it through the winter?

I think you'll find that the bees will haul it away – and I let them do it. It is kind of the same issue as with pollen substitute. The bees won't make use of it if there is fresh pollen coming in. Jelly in the spring time is made with the reserve of protein (stored as vitellogenin) in the fat body. Winter bees are great! *Andrew Dewey, Master Beekeeper*

Frames still full of pollen in the spring when bees have fresh pollen coming in are always a minor problem. The bees would more than likely use the newer pollen for feeding just because it is fresher but given a few rainy days in a row and they will use the older pollen as well. I have also noticed that if the bees are unhappy with the older pollen they will remove it from the hive. Dead outs "always" need to be inspected before using anything from them including the boxes themselves. Our poor bees are fighting way too many problems right now to throw a diseased box at them. *Rick Cooper, Master Beekeeper*

Just like food we put in the refrigerator to use later, collected pollen will degrade over time and not only lose nutrient value, but also become less attractive to the bees than freshly collected pollen. When a number of frames in the brood area are packed with pollen, the cells available for the queen to lay and the hive to produce brood is also decreased. These frames are just taking up space and need to be removed. It is recommended to remove old frames from the brood area after they have been used three to five years. Lipid soluble toxins, pesticides and medications build up in the wax – not what we want the bees using for raising brood! I imagine one of our inventive beekeepers has come up with a way to clean pollen out of frames that are newer – but I find many of the pollen bound frames fit into the three to five year frame rotation plan. The old wax can be removed and replaced with new foundation in the frame. *Carol Cottrill, Master Beekeeper*

Use any clean comb frames containing pollen or a combination of pollen and honey to produce nucs. If you make up nucs and move them to a new location it will help the new colony build up while they get their field force up and running. *Chris Rogers, Master Beekeeper*

What is the benefit of using a slatted rack? There is reference to its usefulness with swarm control. What role does it play?

I have not used them in the past, though I'm going to try some this year. My understanding is that they provide dead air space under the cluster, thus helping the bees to better thermoregulate the hive. As for swarming, if congestion is the issue, they may help a little by providing more space. Interestingly, Brood Minder's new hive scale (four load sensors) is made as part of a slatted rack. *Andrew Dewey, Master Beekeeper*

The slatted rack is supposed to provide cold wind protection to the bottom of the frames in the bottom box. It is felt that this will allow

the bees to raise brood closer to the bottom board earlier in the spring. If my first part of this answer is true then the slatted rack would actually encourage swarming as brood nest congestion could occur earlier in the season. *Rick Cooper, Master Beekeeper*

Slatted racks improve thermoregulation in the colony. Long story short, it will help them stay cooler and drier in the summer and slightly warmer in the winter. Slatted racks also help with congestion in the hive and they greatly reduce bearding. A combination of adequate supering, hive manipulation and a slatted rack will greatly reduce swarms in your colonies. *Chris Rogers, Master Beekeeper*

Would you address the pros and cons of nine frames versus ten frames in honey supers?

The big pro for nine frames is fewer frames to extract! The other pluses are more honey per frame, and easier uncapping. But beekeepers need to be careful: Foundation in honey supers needs to be initially drawn with ten frames in the super (allows for proper bee space). *Andrew Dewey, Master Beekeeper*

I often have to deal with beekeepers that still use ten frame honey supers. The biggest drawback I see to this is that when removing cappings the hot knife will often miss large sections of the honey leaving the beekeeper with the need to either dig in with the knife or use the cappings scratcher. Either way works for getting the honey uncapped. Nine frame spacers allow the bees to draw the wax out just a bit farther thus allowing the hot knife to remove a larger portion of the cappings. I swear by nine frame spacers and encourage all of my extraction customers to use them. This is totally selfish because it only makes my job easier which probably means I'll keep custom extracting for a few more years. Nine frames or ten, the amount of honey you get is the same. *Rick Cooper, Master Beekeeper*

Once all the frames in a 10-frame super have been drawn out, one frame can be removed to allow more space between the frames. A frame spacing tool can be used to evenly distribute the frames in the super. Permanent metal spacers are also available to hold the frames in place. The small amount of additional space between the frames encourages the bees to add wax to the cells, increasing their depth. The deeper cells will hold a bit more honey – but most importantly for the beekeeper, the cells will extend above the edges of the frame making it easier to uncapped them using an uncapping knife. *Carol Cottrill, Master Beekeeper*

Using nine frames in your honey supers makes uncapping and extracting much easier. Because the frames are fatter they are easily uncapped with little wax remaining on the comb, thus you will have much less wax in your honey to filter out. It is best to use nine frames in your supers when utilizing drawn comb, you will have much less issues with brace comb if your using drawn comb. We start any brand new supers with ten frames and switch to nine frame spacing after the frames are drawn out. Remember to stick to ten frame spacing in your supers if you are producing comb honey, nine frame spacing will make the comb too fat for comb honey containers. *Chris Rogers, Master Beekeeper*



Fill Out the 2020/2021 Maine Beekeeper Survey!!

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

VARROA: FIGHT THE MITE

by Jane Dunstan

During the winter of 2020/2021, out of 205 dead hive inspections, 156 hives died from varroa/virus. Approximately 76%! Those statistics reflect *reported dead outs* which does not take into account the number of hives lost from varroa/virus that were not reported or inspected. The role of a beekeeper in 2021 is multifaceted and diverse. In addition to executing best practice hive management strategies, we are also called to be mite managers which often feels synonymous with beekeeping. In many ways, managing for mites has become the number one thing we think about and act upon...and based upon the above statistics, there is good reason for that. Needless to say, the varroa mite has had a HUGE impact on us as beekeepers and upon the lives of our bees. In future articles we will be exploring the various aspects of the **Fight The Mite** philosophy.

- F**ind frames with open brood for an accurate alcohol wash sampling
- I**gnore the temptation to wait until you see mite damage
- G**ather your tools before the season starts
- H**elp your bees to be healthy, productive and mite free
- T**alk to your beekeeper neighbor about mite management
- T**reat mites at the right time with the right product
- H**alt the occurrence of dead outs due to mites
- E**valuate the best miticide to use based on temperature, presence of brood and hive phase
- M**onitor with monthly alcohol washes
- I**magine the excitement of having mite free colonies going into winter
- T**ally up mite counts and ACT
- E**ducate yourself about critical thresholds

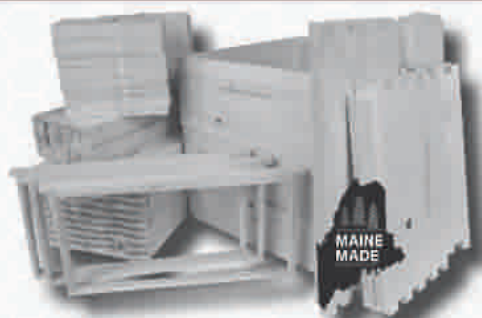


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