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## WAS 40th anniversary conference comes home to UC-Davis in September!



Join the Western Apicultural Society (WAS) for their 40th Annual Conference this September 5 - 8, back where it all began at the University of California, Davis. Enjoy the northern California sunshine, on-campus bee garden and all the 'bee culture' places, events and people that have been drawn to the Davis area over the years. Mix and mingle at the Bee Buzz Social the evening before the conference begins, hear excellent speakers talk about the latest science has to offer the beekeeping industry, with plenty of time to visit with other beekeepers from all over North America.

For those not familiar with us, WAS is a registered non-profit, educational organization with specific interests in western North America (though we have members from all over). Created in 1977 to address the then-unmet needs of small-scale beekeepers, the 2017 version of WAS continues to take care of those needs at the same time it acknowledges and remains inclusive of the commercials. New research, which is the basis of the conference and, by extension, the WAS Journal, is not exclusive to either end of the spectrum. Nor do you need to be a WAS member to join us at the conference.

President Dr. Eric Mussen is a retired entomologist from UC-Davis and still the top 'go-to bee guy' in North America. He is organizing the conference to take advantage of the great resources offered on-campus. Other Davis entomologists - Drs. Elina Niño, Brian Johnson, Rachel Vannette, Neal Williams and Robbin Thorp - are expected to be speaking on their specialties, which include molecular studies, varroa control products, pesticide issues, and work on the succession of microbial turnover in flower nectars as the bloom period progresses. Dr. Thorp, now retired also, specializes in native bees, especially bumblebees. Serge Labesque, a Glen Ellen CA beekeeper originally from France, is "cemented in" as the lead-off speaker. Serge espouses selecting local stock to keep his bee colonies strong and is widely recognized for his immaculate beekeeping and his extraordinary teaching skills. Though they don't agree on all details, Serge and Eric are good friends and each respects the other's expertise.

Conference week will include tours to a major beekeeping supply outlet and a local, specialty-honey packing operation - and look for some special events marking the 40th anniversary. Dr. Mussen was the first WAS vice president way-back-when and the first president, Dr. Norm Gary, a well-known Davis "character", will also be participating. Expect some fun!

*Watch the website ([www.westernapiculturalsociety.org](http://www.westernapiculturalsociety.org)) for more details as they become available.*

*"Back to our roots"*

*WAS returns to UC Davis CA*

*Sept. 5 - 8, 2017 for our 40th Anniversary!*

**Program information and registration  
form now available at  
[www.westernapiculturalsociety.org](http://www.westernapiculturalsociety.org)**

*Bee on California poppy - California's state flower. Photo by Kathy Keatley Garvey*

# THE VOICES of Bee Culture

## THE VOICES of Bee Culture

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THE WAY THEY WRITE

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**CLARENCE COLLISON** – The science of honey bees

**TONI BURNHAM** – Urban bees and beekeeping

**KIM LEHMAN** – Kids and bees

**ED COLBY** – Tales from Colorado

**JAY EVANS** – Found in Translation

**PHIL CRAFT** – Ask a Q, he'll have an A

**LARRY CONNOR** – Bee biology and more

**JESSICA LOUQUE** – Honey bee research, in person

**KIM FLOTTUM** – Herding cats

**KATHY SUMMERS** – Keeping it all on time

NOT IN PERSON, BUT FROM THE MAGIC  
OF TECHNOLOGY...

**JIM TEW** – Beeyard thoughts from Ohio and Alabama

**JENNIFER BERRY** – Raising queens and cane

**ROSS CONRAD** – From Vermont, Naturally

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#### Sunday, September 24:

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*Schedule details, updates and information on our web page and in the next issue.*

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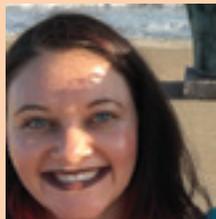
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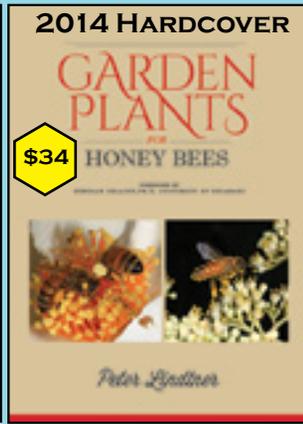
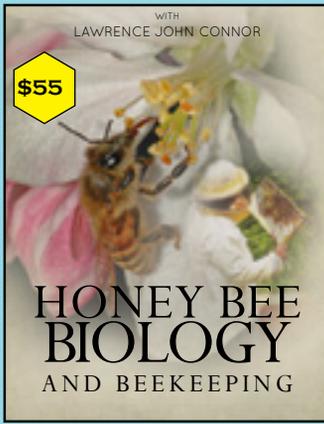
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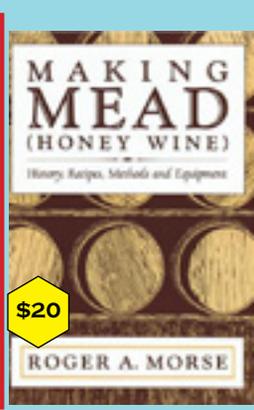
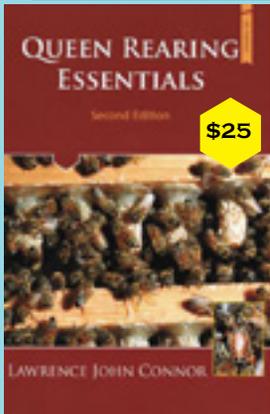
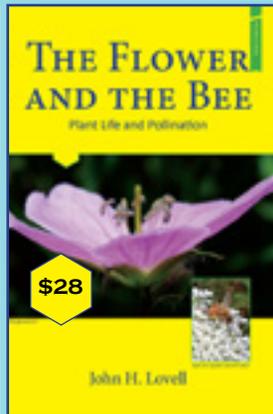
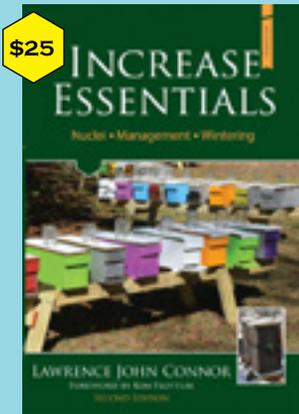
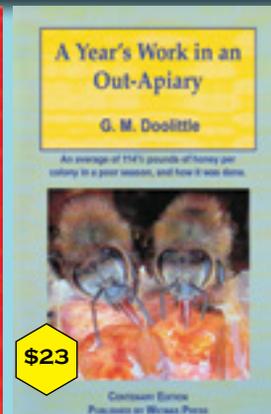
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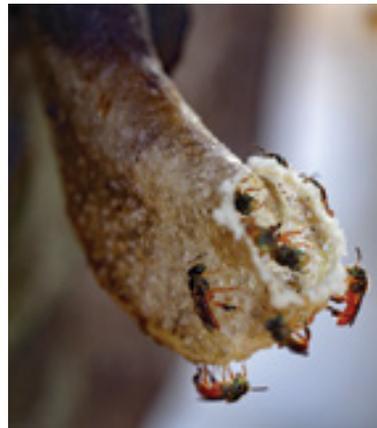
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## Too Far Left???

Your *Bee Culture* magazine has been leaning left more each month, but you REALLY did in the August, 2017 issue. Quoting the Quran and even criticizing our American way. Abu Bakr Ladd must be a great man(in your mind) to have such a huge article!

Carolyn Wallace  
Kirbyville, TX

**Editor's Response:** *We're not sure discussing African bees, or Neem and Moringa trees leans either right or left. Nor are we sure that poison on our land, or in our hives is as bad as some say, or perhaps worse. What we are sure of, however, is that living in harmony with bees, here, Africa or wherever, is a good idea.*

## Cremed or Creamed

I see in the latest issue that there is an article about "Cremed Honey." The last I knew, this type of honey was called "Creamed." Am I missing something as the vocabulary evolves?

Jack Gilbert

**Editor's Response:** *Years ago there was an attempt to change creamed to cremed to make it more apparent that there was no **cream** in the honey. I like the idea, and we're sticking to it.*

## Response To MA Farm Bureau's Errors

The MA Farm Bureau Federation has painted an inaccurate picture of the efforts to limit the use of neonicotinoid pesticides (neonics) as outlined in H-2113, An Act to Protect MA Pollinators (Explaining Massachusetts' Attempt to Protect Bees, July 27).

We reject the Farm Bureau's charge that the bill, on its second time through the legislative process, is a "knee-jerk" response to the problems these neurotoxic chemicals present to bees and other pollinators. Filed by state Rep. Carolyn Dykema, the bill has 135 of 200 MA legislators as co-sponsors precisely because it is a well thought out common sense approach that controls, but does not ban, the use of these pesticides.

The bill says licensed applicators, as opposed to consumers, would be allowed to apply neonics. The bill calls for labeling plants treated with neonics and applicators notifying their clients of the harms before they apply the pesticides. Who could object to people knowing what they are buying and consumers knowing the contingent risks?

As for the scientific studies the Farm Bureau calls for, they have been done and will of necessity continue to be done. But to date, study after peer reviewed study shows that neonics, chemically related to nicotine found in tobacco plants, weaken bees' immune systems, making them more vulnerable to pests like *Varroa* mites and the viruses they transmit.

Further studies have shown that neonics weaken forager bees' ability to find their way back to the hive, inhibit their ability to fly normal distances during foraging, and interfere with queens' ability to reproduce. Another study clearly shows birds being poisoned by eating neonic-coated seeds.

Numerous studies demonstrate that these pesticides accumulate in our environment and remain for years. The damage is cumulative and irreversible. An exhaustive list of these studies can be found at: [www.centerforfoodsafety.org/files/neonic-study-index-3915\\_26197.pdf](http://www.centerforfoodsafety.org/files/neonic-study-index-3915_26197.pdf)

Other studies continue to refine and clarify how neonics pose a serious threat to human health. Waiting longer to put some common-sense restrictions on their use is akin to not requiring surgeons to wash their hands before they operate on sick patients whose health is already compromised. Connecticut and Maryland have already enacted similar bills. We urge other states to do the same.

The Farm Bureau duly notes that farmers need honey bees to help pollinate various crops. We should be natural allies in support of a compromise to an outright ban on neonics, not adversaries. It's time for Farm Bureau farmers to join the MA Beekeepers Association, the Northeast Organic Farming Association/MA Chapter, Friends of the Earth, MA Audubon, the New

# Bee Culture

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England Wild Flower Society and the Toxics Action Center and do what is right for all of us. The time for action to save our pollinators based on indisputable scientific evidence is now. Passing H-2113 is the critical next step in supporting honey bees and all pollinators.

Peter Delaney, President  
MA Beekeepers Association  
Boxford, MA

Julie Rawson, Executive Director  
Northeast Organic Farming  
Association/MA Chapter  
Barre, MA

## No Bees In The City

I have a meeting with the City of Lucedale, MS concerning their new ordinance. I know you have in the past published articles on keeping bees in cities. If you have articles on cities being proactive and wanting beekeeping in cities they would be helpful. Also do you have information on bees declining and the impact that it will have that I can use. I have a meeting On August 1st.

Any information or suggestions I could use to change the city's mind would be helpful.

Michael Everett

**Response:** *There are really two levels in legally protecting beekeeping, and the first is connecting to public officials and local leaders in advance of the arrival of proposed restrictions on beekeeping. This helps keep beekeeping in their minds as a normal activity undertaken by known and trusted community members. Is there*



any chance that you and/or members of your community already enjoy such friendly relationships?

Because you are already in the second, more problematic level of legally advocating for beekeeping: you are fighting an effort already in progress, potentially without known allies who value you and your bees. My suggestion is that you try to learn the origin of the ordinance – what problem is it meant to solve? Who had the problem? These can be incredibly varied, sometimes a jerk with a neighborhood conflict that blows up into a city complaint, sometimes a transition from a primarily rural to a more suburban community with new arrivals asserting new rules, sometimes a reaction to a real public safety event. And more.

I would not go to the press or public social media first. As you know from these days we live in, this is highly likely to ramp up opposition and ratchet down on information sharing and cooperation. I would make sure, via more private channels, that all local beekeepers (including those in surrounding areas – this is likely about to happen to them, as well) are all informed and recruited to the extent possible. The media is always there later.

Be selective where you start asking for information and help. A public official/employee charged with enforcement often has only the power to say “no” to you and may resent it later if you go around or over them to address the issue. They often have no connection to the source of the issue and are part of the aftermath. Take a look at elected members of your local government, find the most promising and ask for a meeting, coffee. It is best if more than one of you, perhaps a delegation associated with a club, shows up to demonstrate that this is a significant group of responsible, friendly citizens.

Then there is the information you should gather and have available to share. Beekeeping is now legal in the

largest cities in the U.S. – Atlanta, New York, Houston, Chicago, Washington, Philadelphia, Denver, Seattle, San Francisco, more. There are bees on the South Lawn of the White House! The introduction of beekeeping has not resulted in additional public health or safety incidents in these locations. Examples of common sense, tested laws that permit beekeeping in tune with local needs are readily available. You might want to take a look at, or get in contact with, the Bee City U.S. people – [www.beecityusa.org/resources.html#UrbanBeekeeping](http://www.beecityusa.org/resources.html#UrbanBeekeeping)

Hope this helped. Happy to get questions!

Toni Burnham  
Washington, DC

## HAS 2018! Already

Hold the Date – **HAS 2018**,  
July 12-14 in St. Louis

HAS has chosen Washington University in St. Louis Danforth Campus as the site of next year’s meeting, HAS 2018, to be held on July 12-14. Based on the enthusiasm and track record of the MO and IL beekeepers, there is every reason to think that HAS 2018 will be the most successful in a long line of HAS events. Not only will there be a new, enriched, teaching curriculum and format, led by preeminent North American scientists and practicing beekeepers, but there will also be social events and tours of several St. Louis’ attractions. Families with children are encouraged to attend. Washington University is in the center of the St. Louis metropolitan area, next to a 1300 acre park that includes one of the country’s best, free zoos, a major kid-oriented science center, and a world class art museum. As planning progresses we will provide more information to your readers.

Save the date: July 12-14,  
2018. We will meet you in St. Louis!

Bob Sears  
President, HAS 2018

## Bt

I saw that comment by Warren Potter about using Bti to control mosquito larvae. Bt treatments are incredibly effective and specific to the targeted larvae. Bees are completely safe. However, I’ve been

trying to get marketing approval for Certan for years (also called Xentari) that’s a Bt treatment for wax moths, but there’s been such a stink about pesticides and such in the general media and lack of understanding from the general public, that the producers of the chemical refuse to register it for use in the US. It really does work great for wax moth control, particularly in stored frames to keep them safe with no smell and no effect on bees. So unfortunate.

Long story short, Bti for mosquito control will not affect bees or their larvae.

Jessica Louque  
Bee Culture Contributor

## Honey House Bee Escape

Several years ago when creating a commercial grade honey house with two friends, we dealt with many issues including placement and capacity of extracting equipment and settling tanks; temperature controls so that we could create a “hot house” just before extracting and then lower temperature so that we could be comfortable working there; providing hot and cold water, etc. Another issue we thought about was providing a way for bees to “escape” our building if they rode in on honey supers bound for extraction.

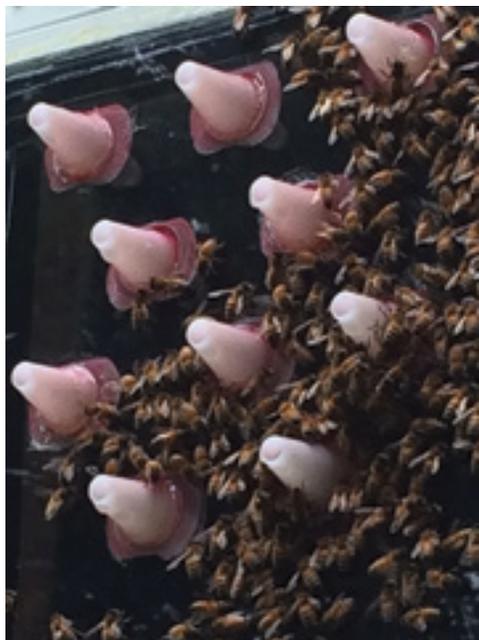
I spoke with two experienced beekeepers who provided some ideas and, in the end, I came up with a solution that might work for our honey house. In a sheet of plexiglass, I mounted several of those red plastic cones that are included in escape boards typically used within a colony to separate bees from their stored honey at harvest time. The cones were mounted high on the plexiglass to take advantage of typical bee behavior of them crawling up when facing an obstacle such as a window. This apparatus was inserted into a small window frame so that light comes through the plexiglass and attracts the bees. When using the bee escape we use black corrugated plastic to cover the other windows in the honey house.

We have lights on in the honey house when working there so this gives the bees several light sources to be attracted to and degrades the performance of the bee escape; however, when we take a break or are done for the day, the lights are turned off and the bees only have the light coming through the escape to attract them during daylight hours. When we come back the next morning, almost all of the bees have exited. Accompanying photos show the outside view with bees who have exited the cones, as well as an inside view showing their underbellies as they are trapped outside. A bee can be seen in the lower right corner as it enters a cone.

Jeff Bryer  
West Chester, PA



Inside view.



Outside view.

## Honey Bee Awareness

One of the goals of a beekeeping club should be to bring awareness about honey bees to the general public. The Wood County Beekeepers' Association did that with an artistic flair this past June. It teamed with the Winnsboro Farmers' Market and the Winnsboro Center for the Arts to host a "Save the Bees" hive painting contest.

Ten area artists volunteered to paint hives for the contest with amazing results. Their creative hives were on display at the Winnsboro Farmers' Market for three weekends in June. Patrons of the Market were encouraged to vote for their favorite hive each time they visited. During the week the hives were on display at the Winnsboro Center for the Arts. On the third weekend the winners were announced and cash prizes given to the top three winning artists. Of course, every participating artist went home with a jar of local honey.

Each weekend during the event club members were on hand to explain the voting and talk about bees, but on the final weekend the club went all out. An observation hive brought a lot of questions about bees from both children and adults and club members were happy to answer them all. Children made antennae out of pipe cleaners and everyone went home with a packet of wildflower seeds. Two club members built and donated a top bar hive that was given away as a raffle item. The club also sold the painted hives on a silent auction and raised funds to do another project in the future.

Immediately following the close of the Market, everyone went indoors and enjoyed a honey



extraction demonstration. Several visitors took turns cranking the extractor, much to the demonstrator's relief. Cameras were flashing when the first drops of honey dripped into the bucket. There was also no shortage of volunteers to taste a gooey chunk of capping wax and honey. Everyone enjoyed the sticky show and the club made a few extra dollars selling the extracted honey.

With this event, the Wood County Beekeepers' Association managed to bring the community together to enjoy the arts, the fresh food of the farmers' market and learn something about honey bees. A few new beekeepers learned how to get started and the general public went away with a new understanding of how important honey bees are. There certainly will be more flowers planted in Winnsboro and much less bug spray as a result of the efforts of the club members.

Mary Smith  
Winnsboro, TX



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You may contact Naked Bee Hives in the following ways: Online Contact Form; Naked Bee Hives, a division of LWO Corporation, P.O. Box 17125, Portland, OR 97217; 503.286.5372; Customer Service: 800.459.8718; Fax: 503.286.4092.



*The Asheville Bee Charmer Cookbook.* Sweet and Savory Recipes Inspired by 28 Honey Varietal and Blends. Written by Carrie Schloss. 208 pgs., hard cover, all color, 7.25d" x 9.25". ISBN 978-1-57284-228-1. \$21.95. Available from Agate Publishing, at [agatepublishing.com](http://agatepublishing.com), and books stores almost everywhere.

Now I love cookbooks. I've written several, published more and even did a show for Japanese television on cooking with honey out on the deck. But it's a 'I know what I like' more than a 'I'd just love to try this recipe' kind of thing because I can pretty much look at the ingredients and the technique and taste the result before turning the page. I've been doing that for years, and I'm pretty good at knowing how something will end up. So, after looking at what's inside this book I decided I had to try some. I wasn't disappointed, and you won't be either. What I like most is that the recipes call for varietal or specific blends of honey. I have some of these. So do you. Get a copy. Make some good food. See if I'm not right.

*Kim Flottum*

# Moving From An Industrial To An Ecological Age

**DR. MARK WINSTON ENDED**

his report on the recent Bee Audacious Conference (*Bee Culture*, June 2017) with the exhortation that “We are at our finest and most effective selves when solitary becomes communal. It is through collaboration that our future prosperity and the health of pollinators will be best assured.” I would argue that communal collaboration is ultimately an audacious, global, inter-species challenge.

In the preface to *Nature Wars: People v Pests*, Dr. Winston writes that “Every kind of organism has defining characteristics by which it can be identified as an entity different from all others.” The upward turned wing tips of the turkey buzzards that fly overhead; the square lip of the white rhinoceros that identifies it as a grazer, separate from it’s hook-lipped, browsing ‘black’ cousin; the flashes of color as a family of bluebirds takes flight; the tail of a fox so distinctive from a distance; the strong smell of the Matabele ants so vivid in my childhood memory; the bouquet of frangipani or brunfelsia flowers; the contrasting barks of different oak species – each signals membership of a distinct group.

**THESE CHARACTERISTICS**

have been misinterpreted, sometimes with fatal consequences. The medieval Doctrine of Signatures, for example, held that every plant and animal was put on earth by the creator to serve human beings and was marked with a signature that indicates the use to which it can be put. Thus the liver-shaped leaves of the liver wort indicated it could cure liver problems, and the ear-shaped hindwing of the earwig was a sign it could cure earaches (crushed, and mixed with the urine of a hare!)

Humans too have signatures that make us distinctive to other species – an upright, bipedal posture, forward facing eyes and relatively hairless bodies. These too have been abused, and variations within those characteristics – skin color, hair texture, eye shape, gender – have led to judgment and divisiveness.

The most unusual aspect of being human however, as Dr. Winston describes, is that we live simultaneously inside and outside of nature. We are subject to the same laws as other animals – our life span is finite, we vie for mates, we respond to variations of temperature and climate – yet unlike other species we consider ourselves not only separate from nature but superior to, and more important than, the rest of life.

**JUSTIFICATION FOR THESE**

feelings of eminence was found in the translation of the Hebrew word *memshalah* as *dominion*, as in having “dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth.” Does dominion mean ‘plunder and subjugate,’ or does it mean ‘care and look after’? A pronouncement by the Imperial Conference of 1926 described Great Britain and the dominions as “autonomous communities within the British Empire, equal in status, in no way subordinate one to another in any aspect of their domestic or external affairs . . .” Thus Canada was declared a dominion in 1867, as was Australia, New Zealand and South Africa within the next 50 years.

“Equal in status, in no way subordinate to another . . .” Our relationship with fish, fowl, cattle and every creeping thing ‘doth changeth’ in the light of this interpretation compared to a definition which justifies the conscious and deliberate remodeling of the globe to suit our needs and which is the core of our current environmental crisis.

Just as every organism has a defining characteristic so does it have a habitat, a niche with food, water and shelter. We, by contrast, not only thrive in different habitats but can invent our own, whether it is the complexity of a city or the recent bio-dome built to test humans’ ability to survive in a Martian environment.

If we accept civilization as beginning 10,000 years ago with the development of permanent human

settlements in at least four different areas of the world, then our society was essentially agricultural for 97% of that time, before the scientific revolution drastically re-shaped our living standards and our environment. For more than 9500 years humans carved a few fields out of the forests and woodlands and fertilized them, if at all, with natural products. They burned a sustainable amount of wood and traveled by foot, horseback or cart along essentially dirt tracks. Today we have token patches of natural vegetation which we need legislation to protect, despite which more than 150 million acres of pollinator habitat have been destroyed in the United States in the last 20 years. We burn sufficient fuel to modify the earth’s climate and asphalt highways are traveled by vehicles, the emissions of which threaten the very quality of the air we breathe.

Honey bees are not indigenous to north America and were first introduced in the early 1620s as part of a western-based agricultural system. In the last 50 years they have been inundated with a number of viruses and parasites – tracheal mites, *nosema ceranae*, *Varroa* mites, chalk brood and small hive beetle, with more to come – which not only straddle the world as the result of global transportation but exist in an increasingly toxic environment, as indeed do we. Speaking at the Pennsylvania Beekeepers’ Conference last November, Mark Winston stated that 1.3 billion pounds of pesticides are used in this country every year, which equates to about four pounds per person. Considering that most pesticides are toxic to humans in doses of one hundredth thousand to one millionth of a pound, that’s a lot of poison.

**IF WE ARE TO BE EFFECTIVE**

perhaps we need to agree on dominion as stewardship rather than as pillage, on interdependence rather than independence, on a web of life rather than a hierarchy. Action can be effective in a crisis – the response to the depletion of the ozone layer

is one example – but stewardship means being proactive rather than reactive; it means respect for all forms of life, it requires humility and requires a re-examination of what we mean by quality of life.

#### RACHEL CARSON CONCLUDED

*Silent Spring* by writing that “the control of nature is a phrase conceived in arrogance born of the Neanderthal age of biology and philosophy, when it was supposed that nature exists for the convenience of man.”

The theme for the PSBA conference in 2016, “Audacious Ideas for the Future of Beekeeping,” was inspired by Mark Winston’s *Manifesto*, first published in 2015, in which he argued for a new paradigm “that recognizes beekeepers as stewards of both managed and wild bees, promoters of healthy environments, managers of economically sustainable apiaries and paragons of collaboration and cooperation. It’s time for some audacious thinking about the future of beekeeping.” Indeed, it’s time for a BHAG.

In 1994 James Collins and Jerry Porras published *Built to Last: Successful Habits of Visionary Companies*, in which they devised the term ‘**Big Hairy Audacious Goal**’. **BHAG**, as it is customarily referred to, is a strategic business statement designed to focus an organization on a single goal which is audacious, likely to be externally questionable but not internally regarded as impossible.

Let’s return for a moment to the term ‘dominion’ as meaning either plunder and subjugate or caring and looking after. In describing the different approaches to beekeeping in the U.S., Europe and Oceania, as compared say to Africa, Maryann Frazier uses the terms *nursing* versus *nurturing*. In the former the management objectives and styles are mostly economically driven, with the maxim that increased yields means increased profits for the beekeeper. The bees are expected to adopt to our needs despite the fact that they are exposed increasingly to diseases, pests and parasites, they exist increasingly in monocultures, we treat even weak colonies for survival, and the bees are expected to use and re-use old comb, which as Keith Delaplane explained, “forces the bees to use their liver as their uterus.” It’s hardly surprising that

pollinators are in decline in so-called ‘developed’ countries.

In many parts of Africa, Asia and South America beekeeping is more biologically driven. It is nurture more than nursing, and we are expected to adapt to the bees. Although this is changing, there is less use of pesticides, less exposure to pests and diseases with minimal intervention by the beekeeper, a diverse environment for foraging, and *Apis mellifera scutellata* is allowed to exercise its need to swarm frequently which not only interrupts the *Varroa* cycle but allows for the frequent building of new comb. Honey bees are not declining in these areas; indeed they are increasing.

There are other examples of this comparison not immediately connected to honey bees. Dr. Mai Van Trang, an Indonesian, in a poem entitled *An Asian View of Cultural Differences*, describes Asians as always at rest compared to Westerners who are always on the move. “We are passive; you are aggressive. We like to contemplate; you like to act. We accept the world as it is; you try to change it according to your blueprint. Religion is our first love; technology is our passion. We delight to think about the meaning of life; you delight in physics . . .” Obviously these are generalizations but you get the picture.

#### SO WHAT IF THE BHAG IS TO

move consciously from the current Industrial era to an Ecological era? Using comparisons developed by Riane Eisler and David Loye in *The Chalice and the Blade*, what if we were to move from an emphasis on material progress to one of a balance between materialism and spirituality; from a consumptive, self-serving behavior to a more cooperative, life-serving behavior; to an identity defined by possessions and social status which leaves us feeling separate and alone, to an identity defined by our participation in life which leaves us feeling connected to a larger universe?

Recent elections in Europe and the USA suggest a retrogression to divisiveness, confrontation, fear, judgement and the elements of domination associated with control and subjugation. Nurturing, by contrast, challenges us to view the world as a living organism of which we are a

part rather than an object to be conquered and exploited. Our interactions would be based on a win:win philosophy and rather than operate from a base of competition, control and fear we would place our trust in cooperation, partnership and love. “These words are hard to keep still within definitions,” said Wendell Berry during the 41st Annual Jefferson Lecture, “but they make the dictionary hum like a beehive.”

#### SO, THE QUESTION REMAINS,

what’s to be done? In 2003 Jane Goodall and Marc Bekoff published *The 10 Trusts : What We Must Do to Care for the Animals We Love*, which can be tweaked for honey bees:

- Recognize that we are all connected and interdependent.
- Respect all life.
- Open our minds in humility and learn from the bees.
- Teach our children to love and respect nature, starting with all insects.
- Be wise stewards of this earth.
- Realize that every action has consequences that last for seven generations.
- Have the courage of our convictions.
- Recognize and help those who work for the benefit of the natural world.
- Act knowing that we are not alone.
- Live with hope.

Is there, perhaps, a BHAG that incorporates a definition of dominion as stewardship, interdependence and a web of life, that places trust in cooperation, nurturing and partnership and which will lead to a shift of our world view for the benefits of all living things, not least our planet?

The U.S. Declaration of Independence, in words composed by Thomas Jefferson, proclaims that “We hold these truths to be self-evident: that all men are created equal; that they are endowed by their Creator with certain unalienable rights; that among these are life, liberty, and the pursuit of happiness.”

What if the Creator (whatever that term might mean) believed that these unalienable rights are endowed not just to human kind but to all living things, just as ‘dominion’ does not justify self serving pillage



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so much as demand the protection and nurture of all life?

Unfortunately, legal systems around the world are not designed to protect nature. Rather, laws and governments are focused on how to use the natural world and its resources as fast as possible for maximum financial gain. There are numerous examples of CEO's who are contractually obligated to make a profit for the benefit of the share holders even when the product is proven to be environmentally harmful. International trade agreements empower corporations to sue governments in order to obstruct or restrain the reach of environmental laws. Global climate agreements remain largely non-binding and unenforceable.

**BUT THERE ARE SIGNS OF** change, and as with many effective movements, they are evident in small groups of passionate people from all around the world. It might be called The Rights of Nature and is described by Mari Margil on a new website, *Democracy: A Journal of Ideas*, in an article titled *Nature and the Law* (20th December, 2016).

I first got to experience it in Costa Rica some ten years ago. In lieu of a standing army Costa Rica devotes equivalent funds to education, health care and conservation, to the point that small schools and clinics cover the countryside, 25% of which has been preserved as national parks. The passion and pride of Costa Rican citizens for the natural world is evident in their daily actions.

Margil cites other examples. Ecuador, in 2008, was the first country to recognize the rights of nature in its national constitution, which was tested when a provincial court found that the rights of the Vilcabamba river were being infringed by road construction that was impacting the river's flow. Similarly in the Galapagos, a judge cited the rights of nature constitutional provisions in ruling that road construction must stop until a government review could guarantee the protection of iguana and other species' habitats.

**HERE IN THE U.S., IN 2013,** Highland Township, PA, passed a local law prohibiting frack wastewa-

ter injection wells, recognizing that the wells would violate the rights of people and ecosystems. The township supervisors repealed the ordinance in 2016 under pressure from an oil and gas company, community members voted in November 2016 to reinstate the prohibition and the township was sued a second time. The case is currently before a Court of Appeals.

**IN FEBRUARY OF 2016 THE** Green Party of England and Wales adopted a national policy platform on the rights of nature, and in September 2016, the General Council of the Ho-Chunk Nation, based in Wisconsin, introduced an amendment to their tribal constitution to recognize the rights of nature. If passed by a vote of the full membership later this year the Ho-Chunk would become the first tribal nation to enshrine the rights of nature in its constitution. Similar initiatives are evident in Australia and India, and as late as March 15 of this year, after 160 years of pressure from local Maoris, the New Zealand parliament has recognized the Whanganui River as a living entity which can be repre-



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sented in court proceedings by two appointed people.

Mari Margil points out that although these laws may be relatively new, the ideas behind them are not. In the nineteenth century environmentalist John Muir wrote that we must respect “the rights of all the rest of creation.” More than a century later Pope Francis, in calling for a new era of environmental protection, declared, in a speech before the United Nations, that “[a] true ‘right of the environment’ does exist...”

As past movements have demonstrated, recognizing rights of the disadvantaged and disposed is difficult, lengthy work, and as current movements show, years of work can be undone by the stroke of a pen.

What it means for honey bees and other threatened species is that instead of trying to rescue individuals we turn instead to the larger environment in which they exist, and in so doing, accept responsibility for having caused it. Like the story of the sage in India who came across villagers pulling a never-ending series of individuals from the river, it’s equally important to find out why they were falling in in the first place.

Changing the hubcaps on a Model T Ford and calling it a Cadillac does not deceive anyone. We need to stop tinkering and go back to big issues. As Margaret Meade famously asserted, “Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it’s the only thing that ever has.” We cannot stand by much longer. “Our ability to radically transform the world,” Dr. Winston wrote, “has caught up with our historical, human-centered sense of dominance and distance,” or as Wendell Berry argued in the 41st Annual Jefferson Lecture, “Ecological health, in a land dying of abuse, is not worth ‘something’; it is worth everything.” **BC**



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# INNER COVER

**A**ugust was about as busy a time as I've had in years. We were gone for a week to Delaware

for the annual EAS Conference which is always a pleasure, but trying to fit in lectures, running the table we have selling books and giving magazines away, and simply visiting with old friends and new friends as well makes it hectic. This year we were a bit busier because we were shooting some live video during the week.

Howland Blackiston, author of *Beekeeping For Dummies*, and his

friends Leslie Huston, owner of Bee Commerce, and Marina Marchese, all out of Weston CT, put on one heck of a show on Tuesday night. It was kind of like Jeopardy, called Jeoparbee, where two contestants were challenged with questions by host Howland and the first to ring in had the first chance to answer the question. If they got it right they got points, if not the opponent had an opportunity to answer and if they got it right they got points. All the questions were about bees and beekeeping and were fun and not too complicated. Howland and his girls were in Gold Lamae and very attractive. Of course Marina, the co-author of our book *The Honey Connoisseur* was fun to watch as she was the Vanna White of the show – it was fun to watch, and we did a live broadcast of most of it on our facebook page. It's still there if you go to our page and click on videos.

If you do, you'll see more videos there that we did at EAS live too. The next night we watched Cliff Sunflower and his Dancin' With The Bees show. Cliff gets everybody in the audience going, all as members of the hive. There's a queen, nurses, drones, foragers, undertaker bees, guards and more. He gets them all on stage and then makes them all do their thing. He starts with the queen, then her court, then nurses, then – and each time he adds a group, he makes them all do what they are doing – the queen is laying eggs, the court is feeding and cleaning her, the nurses are feeding the larvae, the guards are guarding, the foragers are chasing nectar, the undertaker bees removing dead bees – and he gets them doing it faster and faster and faster. If you get a chance, take a look. Cliff is a magician and his bees are wonderful.

The longest live feed we did, now remember, this is live stuff, was to visit the vendors. The KIM&JIM show, with me and Jim Tew stopped by almost every booth and talked with whoever was there for a few moments... what's new, what's going on at your business this year, and what's coming up. Some, like Kelley Bees' Earl King (doesn't everybody in the universe know Earl from Kelleys?) were laid back and easy to talk too, while some were a bit anxious and others a tad under strung, but everybody was good at giving us a lot of information in a short time. It was the newest vendors that I enjoyed most, and they were either in the technology markets...Hive Minder and the like, or the biologicals, with their newest products for honey bee health just getting started. The whole thing lasted just a hair over an hour and it's had over 4000 people take a look. The surprise, right at the beginning was a visit with Charlie Brants, the beekeeper at the White House that we've visited with over the years. He's still there taking care of the bees and having a good time. The Vendor show got rave reviews and was both fun to do, and is fun to watch.

The next thing we did was probably the best show we did, and Facebook lost it in the cloud. We went to the beeyard to watch and listen to the EAS Beeyard Wranglers. Don Hopkins, State Apiary Inspector from NC, Jennifer Keller, lead Technician at Dave Tarpy's Lab at NC State, and Lewis Cauble, one of Don's regional inspectors in NC stand guard, teach, instruct, help, guide and protect bees and beekeepers for the whole week. When we got there Lewis was finishing a demo on a sugar shake mite test

showing a dozen or so beekeepers how he does it and explaining all the ins and outs and how to decide and everything else. It was a good demo, and I'm disappointed facebook lost it.

We did one more before we left. I sat down for a visit with Dewey Caron, Mr. EAS himself. Dewey's first EAS conference was 50 years ago this year, and he's missed only a handful all that time. He served as Chairman of the Board for 10 years, has been President, program chair a few times and now serves as advisor for the EAS Master Beekeeper Program. He was Program Chair again this year and helped us set up the live shows we did, and sat still long enough for his interview. If you want a bit of EAS history, and US Beekeeping history, check out that program, it's worth your time.

We'll be doing more of these as we go along. We'll be in Jim's Bee Yard again looking at some of his hives, maybe out here looking at ours, and who knows where else. All you need is a facebook account and a cell phone and you can broadcast to the world. Exciting times, these. Stay tuned.

Just in case you haven't seen it, the USDA NASS folks came out with their quarterly report on numbers of colonies for those with five or more, and fewer than five colonies, stresses including *Varroa*, other pests, diseases, pesticides, other stresses and unknown stresses in early August. This is, like the last an informative quarterly report. You can get the entire report at the USDA NASS site, but here are some numbers that sort of capture the whole picture I think.

**Live From  
EAS 2017.  
USDA  
Quarterly Stats.**

Date	#colonies Millions	mite stress % affected	pesticide stress % affected	% lost	#colonies 5/fewer thousands
1/1/16	2.62	34.6	10.9	16	40
4/1/16	2.80	53.4	12.4	12	37
7/1/16	3.18	46.1	15.1	12	44
10/1/16	3.03	46.6	9.4	17	40
1/1/17	2.62	42.6	8.9	14	---
4/1/17	2.89	41.6	12.9	8	---

I trust you see the value of gathering all this data and presenting it this way. NASS didn't do this the way I did because they are dealing with all the states over all this time. But we broke it down to these categories in their time frame to show the seasonal fluctuations we know, and have always known exist in this business.

Previously, when NASS was doing an annual survey, you would have seen that the number of colonies on Jan 1, 2014 was 2.74 million, Jan 1 2015 and it was 2.66 million, Jan 1 2016 was 2.62 and now Jan 1 2017 it's 2.62 million. That tells a story, but the wrong story. It shows, essentially, no growth. But wait, there's more. If you go back to the 2016 annual report, the number of colonies was published as 2.78 million, not 2.62 million, a 16,000 colony difference. What gives? Well, each state has a resident number of colonies and that seems to be the lower of the two published here. But every season, colonies move into, or out of states on their migratory routes, increasing or decreasing some state numbers during the quarterly time frame they were counting in. For instance, between Jan 1 and March 1 2016, California count moved from 1.13 million to 1.41 million, obviously for the almond bloom early on. Meanwhile, ND moved from 89 thousand to 137 thousand during the same quarter, though this would have been later in the quarter as colonies moved out of CA, and TX went from 240 thousand to 320 thousand. So, this new quarterly report seems to have taken some of the mystery out of the annual report, or at least made it more realistic, and, even better, now shows the volatility of migratory beekeeping. Just imagine how many semis full of bees moved into Texas during that quarter, carrying 80 thousand colonies, at about 450/truck load

Now, with the quarterly report the picture is much more dynamic, and telling. Add in the other factors

they've now included like stressors, symptoms of CCD and the like and the chart that comes to be is very informational. The pattern of per cent mite stressed colonies is interesting, but not at all surprising. Nor is the pattern of pesticide stress. When do crops get sprayed? Spring and summer. When are the sprayers in the barn? Fall and winter. Like we said, not a surprise but certainly a good picture to be able to show decision makers, suppliers and others who are influenced, supportive or dependent on this industry.

Unfortunately, if you look at this one way, the terrible losses are over and beekeeping has recovered. That's been the story since this came out from those who have pooh-pooed the crisis we face. We know the whole year's pattern, but if one only looks at a partial year all you see is roses. We all know bees don't like roses. If you are challenged with this short sighted view, tell them to look at the whole year. Last year and now this year.

If you look at the same data for those with five or fewer colonies the seasonal cycle is even more dynamic. They only have data for the years 2015 and 2016, but the picture is telling.

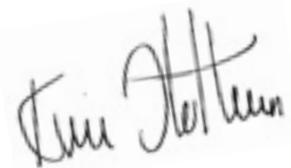
Date	#colonies,000	lost colonies,000	%lost	added colonies,000
1/1/15	50	15	31	8
4/1/15	43	5.5	13	15
7/1/15	52	6.5	13	2.8
10/1/15	49	7	14	.8
1/1/16	40	10	25	6.5
4/1/16	37	4.1	11	12
7/1/16	44	6	14	1.8
10/1/16	40	6	15	.8

The patterns are similar to the commercial operations, but the changes are a bit more dramatic. Certainly the % lost each quarter

for the smaller operations is larger, even though the numbers are much smaller. I encourage you to take a look at the entire 20 page report covering eight quarters over two years. I don't mind huge data sets, but who will take the time to look at these patterns and seasonal variances each year. Add in the pollination report they do now and the world is getting a much better picture of what the US beekeeping industry is all about. Of course it's giving the U.S. beekeeping industry a better picture of what's going on internally also, and, if possible, where improvements or adjustments can be made to improve colony health, beekeeper financial positions, and grower responsibility in terms of working with beekeepers for honey bee health.

•

September is, or was, National Honey Month. 25 years ago it was a pretty big deal and lots of folks got involved. I think it's a sign of the times that the business model of U.S. beekeeping is changing, and honey is carrying less and less of what we do. Certainly it is still important but the tide has, for now turned and it seems that pollination, and making bees for pollination, new beekeepers and more pollination is the way to go. If that's the case, so be it. But I kind of miss the hoopla and attention honey used to get. Don't you? But for the time being, keep your veil tight, your smoker lit and your hive tool handy. There's still work to do.





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# It's Summers Time -

## EAS 2017, Chickens, Bees

Kim and I spent last week (August 1-4) at the University of Delaware attending EAS 2017. We had not been to an EAS Conference for several years, so it was good to get to visit with old friends we hadn't seen for a while. We had a book table in the vendor area. That's always the best spot in the house if you want to know who is at the conference, because everyone visits the vendor area at least once.

There were three beautiful yellow Labs there during the week - all service dogs. In my opinion this is one of the best dogs around. I had a female yellow Lab when my boys were little. She lived almost 16 years and was the sweetest dog ever. The one male service dog at EAS was never on a leash. He stayed close to his lady and was always watching her to see what her next move was. Great dogs!

As has always been typical it was really hot in Delaware the week we were there. But the folks running the beeyard got lucky with no rain - maybe an afternoon shower one day.

It was a good week. Several of our writers were there. It's always nice to get to see them in person. They're all excited about coming to Medina in September for the 'Voices of Bee Culture' event. We hope to see you there. There's still time to sign up. Check it out in this issue and sign up on our web page.

EAS 2018 will be held in Virginia next year, so watch for details. This organization has been around for over 60 years and there were just over 600 attendees there this year. They offer a Short Course at the beginning of the week, then a three-day conference, a Master Beekeeper course and a working beeyard each year.

So, the young rooster I told you about last month had to go away. He didn't go far - just to live at the neighbor's house. I know some of you are thinking you would have made a nice pot pie or soup out of him. But that's not me - I can't eat animals that I've known personally. I do



*Our Root Pollinator Gardens were in full bloom for our Pollinator Day in mid-July. If you're every passing through Medina stop by. We'd be happy to show you the gardens.*

*The new observaton hive inside the Root Candle Store in Medina.*



like chicken but I want it to come in a nice package from the market. We gave him every chance to just be nice and get along. I guess that wasn't in his nature because he started to get very bossy and nasty. So off he went and the ladies - young and old - are calm and happy. The young girls have not started laying as of this writing. They're about three and a half months old, but they have adjusted nicely to living among the older girls. So we're holding at 20 hens right now - four that are five years old, eight that are two years old and eight that are babies.

This week we took off eight medium supers (eight frame) of honey. They're sitting in the garage tightly covered waiting for someone to get time to extract them. I think we're at about eight hives right now. We have one really nasty one that we need to deal with. It's probably going to go away this weekend. They chase me when I go by on the lawn mower and always seem to be just waiting for us when we take off the top - not fun!

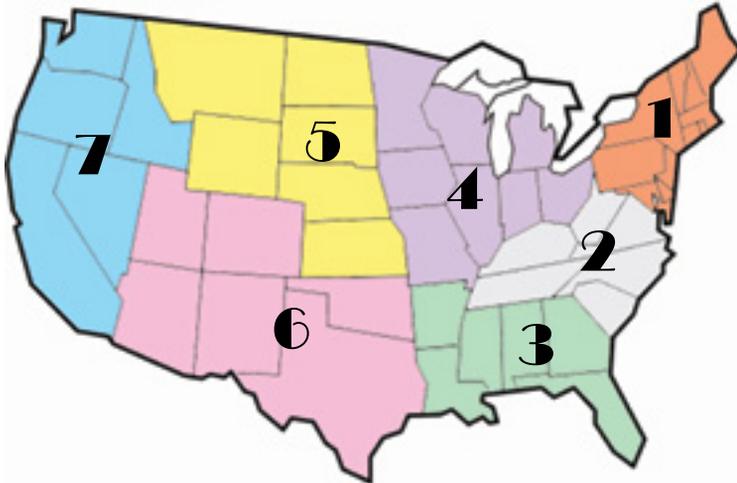
We have a new observation hive in the Root Candle store here in Medina. We had Peter Sieling redesign it and it is beautiful. A local carpenter came in and made sure everything matched up as far as the hole and the pipe for the bees to get in and out - and not end up in the store with the customers. He built a beautiful platform for the hive to sit on which is also nice and secure from any curious young hands wanting to mess with it. We started a nuc on our front porch and then when the observation hive was ready we switched them over. They have a good queen and seem quite happy. Hopefully they'll make it through Winter. That's always the most difficult part for us.

Well, Fall is almost upon us. *Bee Culture* has two great events coming up right here in Medina. It's pretty nice here in NE Ohio in the Fall. Take a look in the issue for information on our "Voices of Bee Culture" event September 22-24, and a one day class called the Hardest Season taking place in October. There is still time to sign up for both.

Hope to see you this Fall in beautiful downtown Medina, Ohio.

*Stacy Summers*

# SEPTEMBER – REGIONAL HONEY PRICE REPORT



## Winter and Summer Loss Survey, Plus, Spring and Summer Honey Crop Survey

Bee Culture's field reporters this month have been busy, and we've been collecting data to give you a picture of what our reporters have gone through since just about a year ago.

Winter loss survey. Average loss in a region when counting all reporters.

Regions:

- 1. 38%      5. 41%
- 2. 31%      6. 32%
- 3. 26%      7. 46%
- 4. 35%

Overall Winter loss average – 36%

With a range of 26 – 46%

Then, we asked about Summer losses. This was up to the first of August, so it's not quite the whole picture of Summer, but it's close. Average loss in a region when counting all reporters.

Regions:

- 1. 3%          5. 7%
- 2. 5%          6. 9%
- 3. 7%          7. 6%
- 4. 12%

Overall Summer Loss average – 7%

With a range of 3 – 12%

Then we asked about the Spring and Summer honey crop. We take into consideration that some regions, or parts of some regions don't have a Spring crop because it is used by the

bees for buildup, and parts of some regions don't have a Summer crop as the honey flow is mostly over by the end of Spring. With that in mind, we asked if the crop was below their average, average, above their average or if they even had a Spring or Summer crop.

Combining the two – below average and just average, we get a picture of the situation of surplus honey by the end of Summer. Dry conditions in much of the country have beekeepers uneasy about harvesting a Fall crop, first because there may not be one, and second, because that may be the Winter food for their bees. So, the combined "below and just average" for regions –

- 1. 65%      5. 42%
- 2. 62%      6. 73%
- 3. 73%      7. 75%
- 4. 56%

Overall, the below, or just average total for the Spring crop was only 68%, while the below, or just average total for the Summer crop was only 62%.

What you have to be aware of is which states are in each region, and what each contributes to the overall honey crop of the U.S. each year. For instance Region 1 – New York; 3 – Florida; 4 – Minnesota, Michigan; 5 – N. and S. Dakota, Montana; 6 – Texas and 7 – California. Combined, these states produce more than 70% of the U.S. honey crop almost every year. A good guess for this year's honey crop is that it is going to be short, especially in regions 4 and 5. Right now, before the Fall crop, and even some of the harvestable Summer crop not in yet, it's hard to say, but being down more than 25% from the 'average' crop isn't outside the realm of possibility. However, what constitutes an 'average' crop is difficult to say anymore, with more and more beekeepers putting their focus on pollination and bees rather than producing a honey crop. So, don't be surprised when more than 80% of the honey consumed in this country this Winter and next year is offshore honey, and not yours.

We also looked at queen replacement problems. 70% replaced less than 10%, 22% replaced between 10 and 50%, 8% replaced, more of their queens this season because of failure. This is a substantial improvement over last year's queen loss record.

REPORTING REGIONS										SUMMARY			History	
	1	2	3	4	5	6	7	Range	Avg.	\$/lb	Last Month	Last Year		
<b>EXTRACTED HONEY PRICES SOLD BULK TO PACKERS OR PROCESSORS</b>														
55 Gal. Drum, Light	1.88	2.08	2.27	2.20	2.20	2.20	2.80	1.50-3.00	2.22	2.22	2.18	2.26		
55 Gal. Drum, Ambr	1.80	2.04	2.03	2.29	2.15	2.03	2.80	1.35-3.00	2.12	2.12	2.09	2.18		
60# Light (retail)	219.58	183.80	196.67	224.13	159.00	182.14	246.67	135.00-300.00	208.53	3.48	201.32	218.59		
60# Amber (retail)	212.29	182.67	190.00	190.96	207.86	184.62	245.00	130.00-300.00	200.72	3.35	200.94	217.64		
<b>WHOLESALE PRICES SOLD TO STORES OR DISTRIBUTORS IN CASE LOTS</b>														
1/2# 24/case	92.85	74.45	89.24	66.67	66.00	84.00	144.00	57.60-144.00	87.32	7.28	89.45	81.37		
1# 24/case	136.81	106.80	128.85	111.34	127.16	123.66	179.20	86.40-230.00	128.69	5.36	123.67	119.60		
2# 12/case	120.78	95.67	110.84	96.64	97.44	98.40	147.00	70.00-192.00	112.74	4.70	108.25	104.49		
12.oz. Plas. 24/cs	111.10	87.50	99.74	82.71	74.40	104.00	128.47	66.00-210.00	101.06	5.61	99.70	96.47		
5# 6/case	138.05	111.75	139.70	103.30	102.30	115.50	180.00	71.50-210.00	127.95	4.27	123.18	120.86		
Quarts 12/case	184.95	134.06	128.84	154.80	155.32	135.08	186.00	110.00-275.00	152.12	4.23	148.87	141.21		
Pints 12/case	113.63	89.00	73.80	98.25	111.00	75.73	102.00	65.00-168.00	93.22	5.18	88.05	91.70		
<b>RETAIL SHELF PRICES</b>														
1/2#	5.41	4.10	4.87	3.93	3.84	3.92	7.00	2.26-9.00	4.74	9.49	5.00	4.44		
12 oz. Plastic	6.77	4.69	5.96	4.50	4.68	6.60	6.94	3.50-12.00	5.84	7.79	5.73	5.75		
1# Glass/Plastic	7.85	6.58	7.97	6.25	6.34	6.81	9.40	3.00-14.00	7.39	7.39	7.28	6.89		
2# Glass/Plastic	13.40	10.33	12.72	10.37	11.07	12.00	16.63	6.00-21.50	12.60	6.30	12.24	11.59		
Pint	15.08	9.16	10.14	10.79	8.50	10.12	9.95	5.00-25.00	10.45	6.97	9.99	10.43		
Quart	19.38	15.74	16.49	15.39	15.40	16.72	20.84	8.00-32.00	17.04	5.68	17.07	16.63		
5# Glass/Plastic	28.15	24.33	34.32	23.00	22.88	26.98	35.00	15.00-42.00	26.99	5.40	26.39	25.84		
1# Cream	9.81	8.25	9.13	7.83	9.99	5.50	11.00	5.50-16.00	9.29	9.29	9.49	8.64		
1# Cut Comb	13.70	8.92	8.25	9.71	12.50	9.25	17.00	5.00-24.00	11.54	11.54	11.28	9.63		
Ross Round	10.59	6.78	10.16	10.00	10.16	10.50	8.40	6.50-15.00	9.56	12.75	9.47	8.90		
Wholesale Wax (Lt)	7.35	5.05	4.50	5.43	6.00	4.95	6.81	2.00-12.00	5.94	-	5.94	6.09		
Wholesale Wax (Dk)	7.17	4.10	3.65	4.80	6.13	4.33	5.63	1.75-12.00	5.39	-	5.51	5.60		
Pollination Fee/Col.	95.91	71.67	58.33	73.75	101.29	135.00	122.50	30.00-200.00	87.58	-	92.04	80.00		



# 46<sup>th</sup> APIMONDIA

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*The Canadian Honey Council and its industry partners are proud to invite you to join the 46th Apimondia Congress, which will be held in Montréal, Canada from September 8-12, 2019. Apimondia 2019 Montréal proposes a theme outlining the importance of bees for our society*

Initial planning is well underway as space and hotel requirements are entering the final stages of negotiations. Montréal is internationally renowned for its hospitality, great attractions, and centrally located modern congress facilities with easy access to the Montréal Trudeau International Airport. The Canadian Honey Council has a team that is working with the City of Montréal and the Palais des congrès de Montréal Convention Center to organize the event.

Pierre Giovenazzo, a professor with the University of Laval is the conference President. Dr. Stephen Pernal the Officer in Charge of the Beaverlodge Research Farm, Canada's only federally funded honey bee research facility, is the Scientific Co-ordinator and Rod Scarlett is the Executive Secretary.

The Apimondia website [www.apimondia2019mtl.com](http://www.apimondia2019mtl.com) is up and running and will be updated often. Look for the web address to change in the near future to [www.apimondia2019.com](http://www.apimondia2019.com). Pre and post conference tours are being finalized and more details will be available this fall. Honey, beer, mead, literature and art competitions are all in the planning stages. Quebec's provincial beekeeping association is planning an outdoor market highlighting their products.

[www.apimondia2019mtl.com](http://www.apimondia2019mtl.com)



Canadian Honey Council

The Montreal Congress will strive to showcase world-wide advancements in the science of apiculture. Emphasis will be placed on topics that are of high prominence in the beekeeping community or that challenge our concepts of modern beekeeping through roundtables and special interest group sessions. Of particular interest will be a focus of the extraordinary growth of the urban beekeeper and the benefits and issues raised as a result. In conjunction with this, the organizing committee is looking at ways to incorporate young beekeepers and youth into the program. We will also endeavor to use web-based streaming of all plenary sessions to allow participants a new category of virtual registration in aspects of the Congress.



# Bees for Development

## Bee Garden Party

### Marlborough House London

Nicola Bradbear

Hundreds of supporters of **Bees for Development** gathered to celebrate bees and the work of the Charity in the gardens of Marlborough House, a former Royal Palace and HQ for The Commonwealth. Baroness Patricia Scotland, Secretary General of The Commonwealth opened the event and spoke of the importance of bees.

The BBC's Martha Kearney hosted the Party together with Classic FM's Bill Turnbull. As the evening unfolded, Martha interviewed guests including eminent scientists, artists and others with extraordinary lives connected to the world of bees. Political Guests included Government Ministers Michael Gove and Lord Alli, while bee researcher Professor Dave Goulson promised that topical new findings on neonicotinoid pesticides would feature in

the following day's news. Peter Tompkins, Master of The Worshipful Company of Wax Chandlers explained his role, as did Doctor Who Director and *Idle* beekeeper Bill Anderson, and stock-broker-turned-beekeeper Dale Gibson of Bermondsey Street Bees.

Guests were entertained by the panache of *Artizani's* stylish and fun bee theatre, displays including **Bees for Development's** bee hives from all around the world, and Chris Park's skep making. They could sample Dr Sara's latest Bath Potions, taste honey with The London Honey Company and mead with New Quay Honey Farm.

Renowned Chef Elizabeth Parker served fantastic vegan food featuring bee-pollinated delicacies, with sparkling wines, organic gin fizz, mimosa cocktails and honey beer, all with a background of jazz – perfect for a summer's evening in the grounds of such historic splendour.

Self-styled *bad beekeeper* Bill Turnbull's natural pizzazz as guest Auctioneer brought exclusive private garden tours, holidays and a few surprise auction lots announced on the evening, even including the very special *Afternoon Tea with Martha Kearney at Fortnum & Mason!*

This exclusive garden party had thoughtful messages to convey too, concerning the vital work of **Bees for Development**, and highlighting our interconnection with bees through food: world food security is reliant on bees and other insect pollinators. This relaxed summer event challenged guests to connect the two: Bees and Food, and to show how we can all make a difference, by the choices we make in our own gardens, and through supporting the charity, to help bees worldwide.



*Bees for Development's Bee Garden Party was held in the gardens of Marlborough House, a former Royal Palace and now Headquarters for the Commonwealth in London's Mall.*



*Guests enter the bee-friendly gardens of Marlborough House, past magnificent tree echiums (*Echium pininana*) full of foraging bees.*



*Bill Turnbull successfully auctions a jar of his own honey for £350!*



*The Bee Garden Party was opened by Secretary General of The Commonwealth, Baroness Scotland.*



*Secretary of State for Environment, Food and Rural Affairs, Michael Gove, here with Martha Kearney.*



*A display of Thorne's beehives.*



*Royal beekeeper John Chapple with his observation hive – the Queen is clearly visible.*



*Guests could sample specially created products with Brazilian green propolis made for the Bee Garden Party by Dr. Sara Robb of Bath Potions.*

The Bee Garden Party was a great success. **Dr Nicola Bradbear, founder of Bees for Development**, said: "There's nothing quite like our Bee Garden Party. It is wonderful mix of people interested in bees, plants, international development, and the natural world - exploring and enjoying these themes together in the glorious setting of Marlborough House's garden in full, bee-friendly flower. All proceeds go towards our charity's work - currently in Ethiopia, Ghana and Uganda, and this event is an excellent way to raise awareness of the wonderful honey bee, a remarkable insect which deserves our protection. I pay tribute to our wonderful Trustees and volunteers and sincerely thank the many generous people and companies that made this amazing event possible. Most particularly E H Thorne (Beehives) Ltd, who have helped in so many ways - from packing hundreds of Party Bags to the logistics involved in transporting all our African bee hives from Wales to central London and home again!" **BC**

The **Bees for Development** Bee Garden Party is now on *the* social calendar and tickets sell out quickly. If you would like to be part of the next Bee Garden Party, as a guest, a sponsor or to donate for the next Auction, do register your interest now. Send your contact details to [bfdoffice@beesfordevelopment.org](mailto:bfdoffice@beesfordevelopment.org)

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- \* **Montana State Beekeepers Association**
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# Winter Colony Development

Lloyd Harris

## What Happens In Colonies AFTER Mid August Determines How Successfully Colonies Can Be Wintered

If you ask most beekeepers how they prepare their colonies for winter, you will be told that “Winter colony preparation begins immediately after the current year’s honey has been removed.” However, the exact calendar date will vary depending on the climate at the location where the bees are being kept.

A beekeeper’s primary objective at the end of the honey flow is to have colonies that are headed by a young “productive” queen and populated with a large population of healthy, well fed “young bees.”

Typically, Fall colony management begins with the beekeeper implementing their preferred method of *Varroa* mite control. This is usually followed by feeding colonies with enough sugar syrup to ensure that they do not starve during Winter.

During this process, colonies are usually checked to ensure that they contain a “productive” queen and populations are “adequate.” Then, the only thing left to do is to wait until ambient temperatures are cold enough before: moving the colonies to sheltered location and wrapping them with insulation; or moving them into overwintering quarters; or transporting them to a location where winter conditions are less extreme than those experienced on the Northern Great Plains of North America.

That is what the beekeeper is doing. The question is what are the bees doing? What is happening inside the colonies to enable them to survive Winter? When do colonies rear the bees that form the winter colonies and how many of them will still be alive come spring?

The answer to these questions depends on: 1) the colonies’ location, 2) the age of the queens, 3) the number of workers in the colonies, and 4) the beekeeper’s management style.

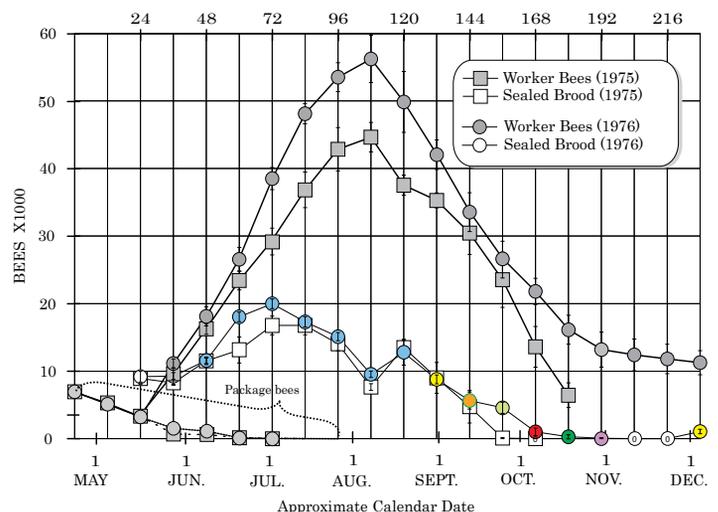
No matter where colonies reside, there is a seasonally related brood rearing pattern that controls how many bees are in each colony during Winter; although data showing these seasonal brood rearing patterns are scarce.\*

Additional data sets about seasonally related brood rearing at other locations may exist in: proprietor research studies, unpublished graduate student thesis, or unpublished research projects. Many studies that reported measuring sealed brood during the season do not adhere to protocols that required sealed brood measurements be taken every 12 days (Smirl, 1970; Nelson, 1971; Fukuda, 1971). Even though, extensive data may have been collected during some of these research projects, if they were not attached to the original study they may now be unavailable or are lost.

In most cases, the seasonal brood rearing patterns in the available research projects are incomplete because they only covered part of the year as most of this research has been done by students and data collection ceased at the end of August when the researchers returned to classes.

In general, the colonies’ seasonal brood rearing patterns show increasing brood rearing levels beginning in spring, which continues until: 1) the queen’s maximum egg laying capacity is reached sometime in July or August (Harris, 2008, 2010); 2) honey storage encroaches on the area utilized for brood production (Harris, 2008; Geiger, 1967); or 3) nectar or pollen availability declines (Smirl and Jay, 1972; Nelson and Jay, 1972; Mattila and Otis, 2007). During this period, new worker bees are constantly being reared in colonies through the combined efforts of a colonies’ worker bees and their queens. How long these new bees exist in colonies is determined mainly by how long they normally live. This can change significantly if a colony: 1) becomes queenless (Fluri, 2012), 2) is moved to another apiary location (Nelson and Jay, 1989), 3) swarms, or 4) is exposed to insecticide(s).

Figure 1 shows the seasonally related worker bee brood rearing pattern and their resulting adult populations in the ten colonies located near Portage la Prairie, Manitoba on the Northern Great Plains of North



**Figure 1.** Average seasonal trends in adult worker bee populations and sealed brood in colonies started with 0.9 kg of worker bees in 1975 (n=5) and 1976 (n=5) in southern Manitoba, Canada. (Calculation Assumption: zero worker bee mortality in the first 12 days of adult worker bee’s life.



**Figure 2.** Crystallized canola honey residue unutilized by honey bees during Winter.



**Figure 3.** Ice formation on an uninsulated hive cover.

America (Harris, 2008) during the Spring and Summer of 1975 and 1976. The differences in the sealed brood patterns between the two years reflected differences in local apiary conditions and the beekeeper's managerial style.

The 1976 sealed brood data after late August in Figure 1 has been colored to conform to the colored sub-populations represented in Figure 4. This sealed brood represents the portion of the sealed brood production curve that produced the early Winter colonies. Understanding what happens to the sealed brood production after the 31<sup>st</sup> of August is critical to understanding initial winter colony formation.

Figure 1 shows a steady decline in sealed brood production after mid-August, which continued until it temporarily ceased in October. The differences between the 1975 and 1976 sealed brood production curves after the honey flow shown in Figure 1 can be attributed to "a beekeeper effect". Brood production responded to how the colonies were being managed.

The sealed brood data from September 1975 shows what happened when colonies did not receive any special late Summer-Autumn management. The consequences of leaving these colonies to prepare themselves for Winter were that these colonies: 1) contained large quantities of canola honey, which they were unable to adequately utilize during Winter (see Figure 2), 2) ceased brood rearing early (see figure 1), 3) contained fewer bees (see figure 1), 4) produced metabolic water that formed ice crystals on frames and on the inner cover above the bees (see Figure 3).

In 1976, the colonies were then managed to deal with these problems. The 1976 sealed brood data reflected what happened when colonies were fed sugar syrup in September and provided with an insulated inner cover on the 11<sup>th</sup> of November, before they were placed into a building in early December for Winter.

Although the general trends in sealed brood production after mid-August for the two years of data shown in Figure 1 followed the same general trends, there were apparent differences in brood production. These differences reflected changes in management practices.

In September 1976, the colonies were fed sugar syrup because it was apparent from the previous year that canola honey became too hard for the Winter bees to effectively utilize it during Winter (see Figure 2).

Feeding sugar syrup to the colonies in September was only intended to provide colonies with a food source that would remain liquid longer. It not only did that, but it also appeared to have been responsible for the associated elevated sealed brood production that also occurred in September.

In early November 1976, colonies were also provided with insulated inner covers because of the amount of ice that had formed inside colonies from the metabolic water produced by the colonies the previous year (see Figure 3). The insulated inner covers appeared to have allowed the colonies to maintain conditions inside the hive that were conducive to brood rearing, which allowed colonies to resume brood rearing shortly thereafter. This was another unintended consequence of changing a management practice. Wrapping colonies with insulation for winter often produces a similarly effect and allows brood production to resume.

Although data showing brood rearing during late Summer, Autumn and Winter are scarce, this does not mean that brood rearing does not happen. It just means that researchers and beekeepers normally do not look inside their colonies once the honey flow is over and ambient temperatures fall below 32°F (0°C). However, brood rearing during Winter has been documented.\*

It should be noted that low levels of brood rearing continued in these colonies throughout the Winter (Harris 2009), which is contrary to the commonly held belief that colonies suspend brood rearing during the Winter.

If a colony suspends its brood rearing during late Summer, Autumn or Winter, it usually indicates that it: 1) contained an old queen, 2) was queenless, 3) was unable to maintain adequate brood rearing conditions, or 4) contained insufficient stored pollen to support brood rearing.

If brood rearing does not continue in colonies from late Summer into Autumn or during Winter, the net result will be that their populations will continue to decline. There are no other options possible. Bees still die every day even during Autumn and Winter; albeit, at a much lower rate than those that occur during Spring and Summer (Nickel and Armbruster, 1937; El-Deeb, 1952; Free and Spencer-Booth, 1959; Sekiguchi and Sakagami, 1966; Mattila et al., 2001).

As of the 5<sup>th</sup> of December, only 32.3 percent of the adult bees from the 31<sup>st</sup> August sealed brood were still



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alive, only 67.4 percent of the bees from the 12<sup>th</sup> of September sealed brood were alive, only 74.2 per cent of the bees from the 24<sup>th</sup> of September sealed brood were alive, and 91.5 percent of the adult bees from the 6<sup>th</sup> of October sealed brood were still alive. Bees never stop dying. Without new bees being reared to replace the bees that are dying, the result was inevitable. The only thing that colonies could do was become smaller.

As the sealed brood production declined after the honey flow, so did the size of the adult worker bee population (Figure 1). Between mid to late August and the end of October, colonies declined at an average rate of approximately 481 bees per day, because these dying bees were not being replaced as quickly as they normally die. Consequently, adult bee populations declined rapidly after mid to late August.

The rapid population decline (see Figure 1) was not related to higher than normal worker bee mortality during this period. Worker bee longevity remained at levels similar to those normally observed in “healthy” colonies during Spring and Summer. Prior to the end of August, the average worker bee consistently lived between 33.3 to 36.0 days (Mattila et al, 2001) with only 0.085 percent of the adult worker bees living more than 84 days. Detectable changes in worker bee longevity did not occur until after early to mid-October when worker bees began living much longer than they did during Spring or Summer.

The reason for the rapid decline in the colonies adult bee populations during this period can be traced primarily to reduced brood rearing (see figure 1), which coincided with agricultural crops ceasing to flower. During this period, colonies simply did not rear enough new bees to compensate for the rate at which adult bees were dying.

Because all worker bees look virtually identical, it is almost impossible to tell which bees were added to a colony, when they were added, or how many from each age class still remain. There are ways to determine how old worker bees are, however all these methods are time consuming and involve intensive work.

The worker bee’s age can be determined by marking each new batch of emerging bees with a distinctive colored paint (Harris 1979) or tagging each bee with a small colored or numbered plastic disc (v. Ebert, 1922;

Smith, 1972). These marked or tagged bees are then counted daily, weekly, or bi-weekly until they all die. It is then a matter of applying some basic mathematics to determine how many bees of what age remain in a colony (Harris, 1985; Harris, 2008; Harris, 2016). When the population estimates for each adult bee sub-population are arranged graphically in succession one above another, they illustrate the colony’s age structure or demography (see Figure 4).

Figure 4a illustrates a colony’s average age structure at the end of August/beginning of September for colonies started in Spring with two pound packages of worker bees and a mated queen. The unsealed brood (eggs & larvae) have been colored **black**. The sealed brood (sealed larvae and pupae) have been colored **brown**. All the adult bees that were present in the colonies on 31<sup>st</sup> of August were colored **blue** regardless of their age, because most of them, if not all of them, died before the 11<sup>th</sup> of November.

Colony age structures after the 31<sup>st</sup> of August are shown at 12 day intervals (Figure 4b-4i). Adult bee sub-populations emerging from the sealed brood after 31<sup>st</sup> of August are represented by **a different color every 12th day**. This allows the reader to easily follow each age related sub-population as they age and die.

Between the end of August and the 11<sup>th</sup> of November, all or almost all of the initial 42,038 ( $\pm 2,190$ ) bees present in every colony at the end of August had died (refer to the blue colored bee subpopulation groups in Figure 4).

The “blue bees” in Figures 4g, 4h, and 4i, were either the remnants of the adult bee sub-population that emerged as adult bees between the 19<sup>th</sup> of August and the 31<sup>st</sup> of August, or they are an artifact of the graphing methodology used to draw the graphs, which connected the mid-points of the respective sub-populations. Despite this subpopulation having been estimated to be zero on the 11<sup>th</sup> of November, there is a possibility that a small percentage of this sub-population may have been alive when the seasonal transition to longer lived Winter bees occurred.

The fate of all the “blue bee” sub-populations would still have been the same even if the initial colonies had been larger. These bees were all subject to the same Spring (or Summer) survival (or mortality) rates. Their

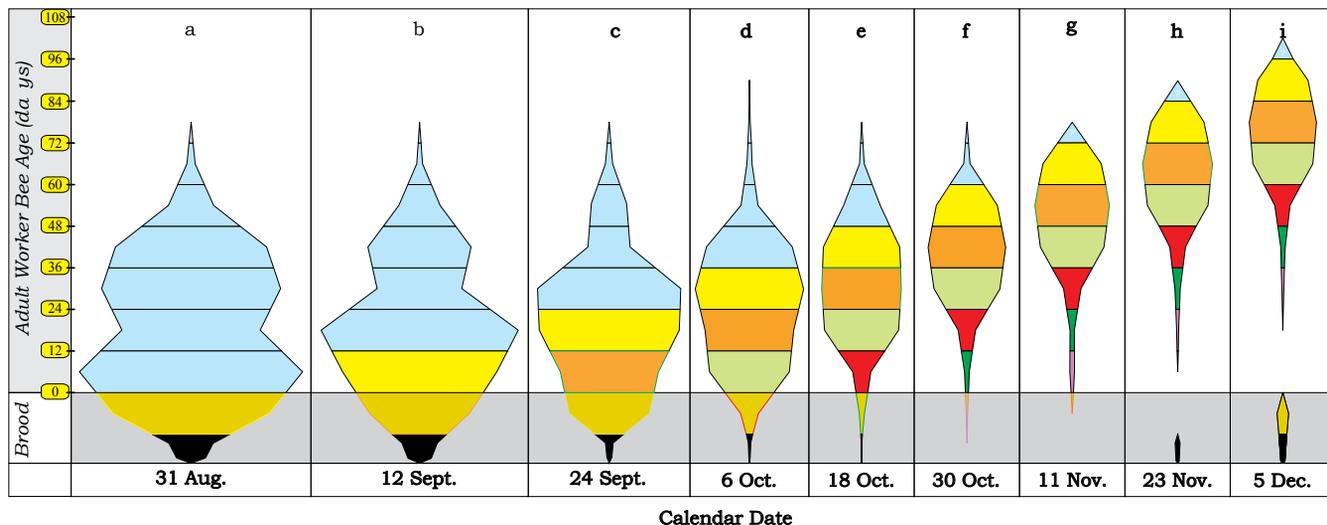


Figure 4 a-i.

life span was fixed. All of the bees present in the colonies at the beginning of December were reared between mid-August and late October.

In conclusion, what this reveals is that almost all the bees forming the Winter colonies in early December were produced from eggs laid after early August. In practical terms, this suggests that the colonies' adult population's size at the end of the honey flow may not be as important as one might have thought. Rather, it depends on when and how much brood is being reared and when the Autumn inflection in worker bee survival occurs (Mattila et al, 2001) that are important. The size of the colonies in early December is **not** directly related to the adult population's size at the end of August. It depended entirely on how many bees colonies rear after mid-August. It may be that only a portion of the 42,038 ( $\pm 2,190$ ) bees in every colonies on 31<sup>st</sup> of August were actually needed to rear the Winter colony.

The questions that beekeepers may want to ask themselves as they prepare their colonies for winter are:  
1) What portion of the bees present in colonies at the end of the honey flow are actually needed to produce the Winter colonies or are these bees just part of an expensive retirement program; consuming valuable honey without contributing in any meaningful way to

the Winter colony? It appears like the latter may be occurring.

- 2) What affect would re-queening colonies at the end of the honey flow have upon the production of the Winter colonies? At the end of the season, colonies with older queens cease brood rearing sooner than colonies with younger queens (Cale, 1956; Harris, 2008). It is likely that requeening colonies will alter their demographics or colony size, maybe both.
- 3) What will happen if management practices severely reduces brood rearing after mid-August, since this is when the early Winter colonies are produced? It appears that reduced brood rearing in August, September, or October will diminish how many bees colonies contain during Winter.

These three items need to be considered when colonies are being prepared for winter. What happens in honey bee colonies after mid-August determines how successfully the colonies can be wintered.

\*The author has listed over 50 references supporting the information in this work. These have been listed in the digital edition of this issue, and will also be available with this article on *Bee Culture's* web page for your review.



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Bees build three kinds of brood cells: worker, drone and queen cells. The queen cell is the largest of the three and is markedly different in several ways. They hang vertically in the hive, while the others are horizontal; it may be built between combs, and thereby interfere with bee space; the physical structure of the cell, with its mottled exterior, tapered shape, a cocoon that fills but half the cell and a cell tip that does not make contact with the cocoon, differ markedly from the ordinary brood cell. There are basically two types of queen cells; those made by enlarging a worker cell and allowing the worker larva to migrate into the enlarged portion, where she is specially fed to become a queen (emergency queen cell) and those constructed from queen cups for the express purpose of producing a new queen (swarm or supersedure queen cells). Emergency cells are built when a colony becomes queenless; swarm cells are built when a colony is about to divide (swarm) and supersedure cells are built when a colony is about to replace an old or failing queen (Morse and Hooper 1985). In each of these situations there are typical characteristics in the number and location of queen cells reared.

Emergency queen cells are usually found in the center of the brood nest. They may be scattered, but never will they be found hanging from the bottom of a frame or away from the brood nest. When an emergency cell is opened, it can be seen that it has its basis in an ordinary worker cell. Swarm and supersedure queen cells are, for the most part, found in the lower half of the nest; some will be hanging from the very bottom of the nest. In the process of superseding, bees build fewer cells than they do with swarming, but the number is variable in both cases and overlap. In the case of supersedure cells, fewer will be hanging from the bottom of the frames. Unlike all other cells in a hive, queen cells are never re-used. After the queen has emerged, the cell is usually torn down and soon no evidence of its existence remains (Morse and Hooper 1985).

Queen mandibular pheromone has been shown to effectively inhibit the rearing of new queens. The presence of her pheromone prevents worker bees from rearing replacement queens until the supply of the pheromone either stops (the queen is removed or dies), diminishes (as in supersedure) or there is serious interference in worker bee distribution of the queen's pheromone (as in swarming) (Caron and Connor 2013).

The effects of various dosages of queen mandibular pheromone on the inhibition of queen rearing in queenless honey bee colonies was investigated. Dosages ranged from  $10^{-3}$  to 10 queen equivalents (Qeq) per day, one Qeq was the amount of pheromone in an average pair of queen mandibular glands. Both temporal and dose-dependent effects were found. The higher doses were effective at preventing queen rearing early in the experiment (days 0-6), but by day 10, when queen rearing was effectively completed, there were few effects at any doses. Approximately 1 Qeq/day was sufficient to suppress queen rearing for up to six days in colonies of 8,000-10,000 workers. Results indicate that the active components of queen's mandibular glands exhibit dose-dependent effects on queen rearing, but there are additional requirements necessary for the suppression of queen rearing for periods longer than six days. The amount of pheromone secreted by queens and distributed



# A Closer LOOK

## QUEEN CELLS AND REARING STIMULI

Clarence Collison

*There are basically two types of queen cells – those made from a worker larva, and those constructed from queen cups.*

by workers may be considerably greater than previously considered (Winston et al. 1990).

Adding queen mandibular pheromone into honey bee colonies earlier than 24 hours after queen loss resulted in an inhibition of queen-rearing, but not when added after four days. The number of queen cells initiated in each treatment decreased with the addition of the pheromone, although there were no effects on the number of queen cells torn down following pheromone treatment. The effect of adding the pheromone to queenless colonies given newly hatched female larvae under different regimens of queen cell provisioning and cell structure also was investigated. Only colonies in which larvae were presented in unmodified worker comb exhibited significantly lower

## Queen mandibular pheromone inhibits the initiation of queen rearing but not the maintenance of established cells.

rates of queen-rearing. Results indicate that queen mandibular pheromone inhibits the initiation of queen-rearing but not the maintenance of established cells (Melathopoulos et al. 1996).

Ebadi and Gary (1980) investigated some of the factors affecting the acceptance of grafted queen cells. Acceptance was low (32%) when queen pheromone (9-oxododec-trans-2-enoic acid) was present in the wax of artificial queen cups. Statistically significant differences were found between the acceptance rate of queen cups made of: (a) beeswax from old brood combs (86.6%), (b) fresh beeswax (76.6%), (c) capping wax, beeswax foundation, or equal parts of paraffin and old beeswax (70%). Pure paraffin cells were not accepted at all. Acceptance was independent of the time of day or night when grafting was done. Acceptance of cells primed with royal jelly containing 10% bee-stored pollen was 50.9%, but 93.3% for control cells primed with pure royal jelly. Royal jelly containing 10% stored pollen caused much rejection when added to cells containing developing queen larvae. Acceptance was 86.2% for cells primed with royal jelly containing 10% honey, but only 52% with royal jelly containing 5% honey and 5% stored pollen.

The effect of three grafting methods, addition of royal jelly (a), dry grafting (b) and grafting with addition of water (c) and three months of Summer in June, July and August,

on queen rearing were investigated. The highest larvae acceptance rates were observed by dry grafting in July and grafting with addition of royal jelly in July and August. The length of the queen cell was highest by the use of royal jelly in June and August. The shortest pre-oviposition period was observed by addition of royal jelly in July and by other two methods in June, July. Mating rate, number of spermatozoa, spermatheca diameter and emergence queen weight were not affected by treatments (Genc et al. 2005).

Several studies have shown that the pheromone produced in the queen's mandibular glands suppresses the rearing of new queens. Pettis et al. (1997) investigated the existence of an as-yet unidentified, brood-associated signal that acts in conjunction with the queen's mandibular pheromone to suppress queen rearing. When they manipulated the levels of synthetic queen mandibular gland pheromone (QMP) and young brood in queenless colonies, there was a 50% reduction in the number of queen cells reared compared to colonies receiving QMP alone. In a second experiment, colonies containing eggs and young larvae but no QMP reared

on average only one queen cell after 24 hours, while colonies containing older larvae reared four queen cells, suggesting that combs with younger brood were the source of the second signal. In a third experiment, they attempted to induce queen rearing in the presence of the queen by removing eggs and young larvae in colonies with healthy queens. Six of nine brood-manipulated colonies initiated queen cells, compared with only one of nine colonies receiving a sham manipulation. The results from this experiment suggest that a decline in the brood signal initiated queen superseding in honey bee colonies. Results from all three experiments clearly demonstrate the existence of a "fecundity" signal that acts with QMP to suppress queen rearing.

The age of the brood used for rearing queens has a major impact on the quality of the resulting queens. The best are queens reared from eggs. Gabka et al. (2011) investigated whether the age of the eggs affects their acceptance by the rearing colonies. In four series, eggs at the age of 0-18, 24-42 and 48-66 hours were introduced to five colonies. All colonies in the first and third series had open brood and were queenless for one day. The second and fourth series had no open brood and were queenless for 10 days. Out of all the 720 introduced eggs, the bees accepted 44.4 % for queen rearing.

No significant differences were detected between the total number of eggs accepted by the colonies with an open brood- one day after the queens had been removed (43.6%) and colonies without open brood - 10 days after the queens had been removed (45.3%). However, significant differences were detected between the acceptances of eggs of different ages. The age of the eggs did not significantly influence their acceptance by rearing

colonies with open brood-one day after the queens had been removed. However, the bees significantly accepted the lowest percentage of eggs (25%) after the youngest eggs, 0-18 hours old were introduced, and the bees accepted the highest percentage of eggs (64.2%) after the oldest, 48-66 hours old were introduced into colonies without open brood - 10 days after queens were removed.

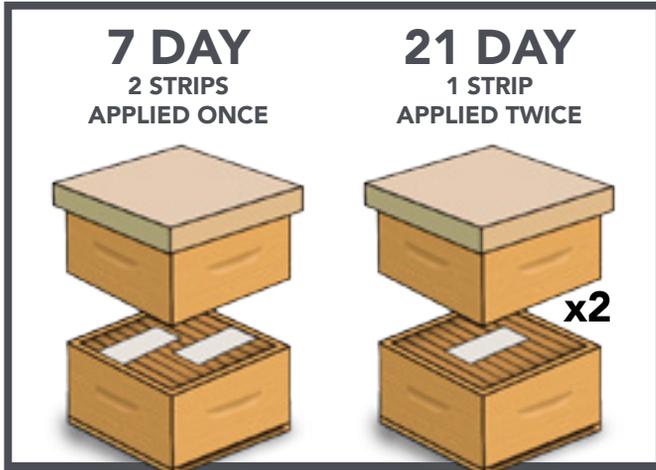
The probability that an egg in a queen cell cup will be reared as a potential queen in a honey bee colony depends on its location within the rearing colony. Eggs in cells near the center are reared more frequently than those on the edges and those near the top of the frame more frequently than those lower down. The importance of this effect is greater when bees are more selective among potential queens; when larvae are grafted into queen-cell cups acceptance is greater than when eggs are used, and there is a non-significant tendency for cells near the center to be accepted in preference to those near the edges (Visscher 1986).

Queens were reared from eggs and from larvae one, two, three, and four days old (Wyoke 1971). They were then mated either naturally or instrumentally with one to



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Each increase of one day in the age of brood grafted decreased not only the body weight, the size of the spermatheca and the number of ovarioles of the virgin queens.

2x8 mm<sup>3</sup> of semen. Each increase of one day in the age of brood grafted decreased not only the body weight, the size of the spermatheca and the number of ovarioles of the virgin queens, but also the number of spermatozoa in the spermathecae of naturally and instrumentally inseminated queens. A given amount of semen injected into the oviducts resulted in different numbers but similar concentrations of spermatozoa in spermathecae of different sizes. A smaller number of spermatozoa entered the spermathecae, despite a surplus of semen in the oviducts and plenty of space in the spermathecae. Correlation coefficients between different characters were significant only when queens reared from brood of different age were compared. Partial correlations showed that a direct correlation existed between the age of grafted brood and the number of spermatozoa in the spermathecae of mated queens.

Honey bee workers are able to nurse or to destroy and thus recognize the capped queen cells containing a pupa. Fatty acid esters, especially methyl oleate, methyl palmitate and ethyl oleate were found in significant amounts on the queen pupal cuticle. Methyl oleate, the major component, along with smaller amounts of methyl linoleate and methyl linolenate, were involved in the recognition of queen cells by workers. In natural conditions of the colony, queen cells containing a paraffin pupal lure with methyl oleate were accepted 5.9 days by workers, releasing about 1.8 queen pupa equivalents during that period, when control cells (without ester) were kept only 2.1 days. Although these esters are non-specific to honey bees, they are of great importance in social regulation of the honey bee colony (Le Conte et al. 1994).

When queenless honey bees rear new queens, the relative frequencies of subfamilies found in the queen and worker brood are often very different suggesting that certain subfamilies found in the queen and worker brood are often very different, further suggesting that certain subfamilies are reproductively dominant. At least two mechanisms could account for the observed differences in queen and worker broods. First, kin selection theory predicts that if honey bee workers are able to distinguish levels of relatedness, they should act nepotistically by favoring super-sisters (full sisters) over less related half-sisters during emergency queen rearing. Alternatively, selection might result in royalty alleles (An allele is an alternative form of a gene at the same site in a chromosome. Organisms typically have two alleles for a single trait one being inherited from each parent) that make their possessors more favored for rearing as queens. Documented genetically based tendencies to rear queen or worker brood might interact with either of these mechanisms. To determine which of these effects might best explain reproductive dominance, Osborne and Oldroyd (1999) removed brood from the queenright section

of one colony and offered it to the queenless section of the same colony and to three unrelated queenless colonies. They used two microsatellite loci to determine the paternity of queen and worker brood reared by these colonies. Variance in the proportions of subfamilies in queen and worker brood was greatest when the rearing bees were related to the brood. These results suggest that nepotistic interactions are more important than royalty alleles or other factors in causing reproductive dominance, but that there are complex interactions between the genotype of the nursing workers, and the genotypes of the larvae favored for rearing as queens. **BC**

#### References

- Caron, D.M. and L.J. Connor 2013. *Honey Bee Biology And Beekeeping*. Wicwas Press, Kalamazoo, MI, 368 pp.
- Ebadi, R. and N.E. Gary 1980. *Acceptance by honeybee colonies of larvae in artificial queen cells*. J. Apic. Res. 19: 127-132.
- Gabka, J., M. Ochnio, Z. Kamiński and B. Madras-Majewska 2011. *Effect of age of eggs used for rearing honey bee queens on the number of received queen cells*. J. Apic. Sci. 55: 47-53.
- Genc, F., B. Emsen and A. Dodologlu 2005. *Effects of rearing period and grafting method on the queen bee rearing*. J. Appl. Anim. Res. 27: 45-48.
- Le Conte, Y., L. Sreng, N. Sacker, J. Trouiller, G. Dusticier, and S.H. Poitout 1994. *Chemical recognition of queen cells by honey bee workers* *Apis mellifera* (Hymenoptera: Apidae). *Chemoecology* 5: 6-12. doi:10.1007/BF01259967
- Melathopoulos, A.P., M.L. Winston, J.S. Pettis and T. Pankiw 1996. *Effect of queen mandibular pheromone on initiation and maintenance of queen cells in the honey bee (Apis mellifera L.)*. *Can. Entomol.* 128: 263-272.
- Morse, R. and T. Hooper 1985. *Queen Cells*, In *The Illustrated Encyclopedia Of Beekeeping*. pp. 315-316. Edited by R. Morse and T. Hooper. E. P. Dutton, Inc. New York, NY
- Osborne, K.E. and B.P. Oldroyd 1999. *Possible causes of reproductive dominance during emergency queen rearing by honeybees*. *Anim. Behav.* 58: 267-272.
- Pettis, J.S., H.A. Higo, T. Pankiw and M.L. Winston 1997. *Queen rearing suppression in the honey bee- evidence for a fecundity signal*. *Insect. Soc.* 44: 311-322.
- Visscher, P.K. 1986. *Effect of location within the nest on acceptance of queen cells in honeybee colonies*. J. Apic. Res. 25: 154-157.
- Winston, M.L., H.A. Higo and K.N. Slessor 1990. *Effect of various dosages of queen mandibular gland pheromone on the inhibition of queen rearing in the honey bee (Hymenoptera: Apidae)*. *Ann. Entomol. Soc. Am.* 83: 234-238.
- Woyke, J. 1971. *Correlations between the age at which honeybee brood was grafted, characteristics of the resultant queens and results of inseminations*. J. Apic. Res. 10: 45-55.

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# NOD APIARY PRODUCTS' STORY OF INNOVATION

## THE CHALLENGE

### Part 3, Developing An Environmentally Friendly Miticide

David **VanderDussen** and Kathleen Ireland

**Recap:** In Part 1 of this series we discussed the development of an organic miticide to control *Varroa*, tracheal and tropilaelaps mites that infect honey bees and what goes on behind the scenes in the laboratory. In Part 2 we discussed how the bees work with the treatment, gaining optimal efficacy. Now in Part 3 we will explain our process of registering a bio-pesticide in the USA, the final requirement for beekeepers gaining access to *Formic Pro*.

#### US-EPA Biopesticide Registration

*Formic Pro*™ is considered a biopesticide in the U.S.; in Europe it is considered a non-synthetic Veterinary Medicine. The laws governing biopesticides in the U.S. are readily available through the EPA website: <https://www.epa.gov/pesticides/biopesticides#what>

Here we read:

*Before a pesticide can be marketed and used in the United States, the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) requires that EPA evaluate the proposed pesticide to assure that its use will not pose unreasonable risks of harm to human health and the environment. EPA also determines whether there is a reasonable certainty of no harm from pesticide residues in food or feed and*

*sets tolerances, or exemptions from tolerances, for allowable residues of pesticides in food and animal feed under the Federal Food, Drug, and Cosmetics Act (FFDCA), as amended by the Food Quality Protection Act (FQPA).*

At this time there is an exemption from a tolerance for formic acid in honey, but we want to show due diligence to ensure that our product will not be a concern, so here at NOD we went back into the bee yards to conduct a study on formic acid levels in honey.

#### Standard of Identity for honey

What exactly is honey and how do you prove it? For most products there is an adopted Standard of Identity against which samples can be tested. There is a gap in North America: there is no agreed upon standard of identity for honey. For some background on the situation here is a link: [www.abfnet.org/?31](http://www.abfnet.org/?31).

In the void of a standard of identity for honey in the U.S., NOD has adopted the one set within the European Union as its standard of reference for total free acid; however it does not address the complex and variable medley of acids that are naturally present in honey, including formic acid<sup>1</sup>. Therefore NOD turned to



peer-reviewed literature for the levels of formic acid that could be expected to be found naturally in honey. From these sources it is determined that the upper level of total free acids in honey is 50 milli-equivilants per 1,000 grams, the upper level of formic acid that can be expected to occur naturally is 1,229 parts per million<sup>2</sup>.

#### Beeyard Honey Study

In June of 2016, 15 colonies of varying strength were set up in two yards, Linn and Howe (30 colonies total), to study and determine if treatment with *Formic Pro* led to increased levels of formic acid and free acid level in honey to above the acceptable norms. The Langstroth hives were equipped with solid bottom boards with rims ½ to ¾ inches in height; the entrances were unrestricted across the full width of the hive. All hives were configured to be a worst-case scenario, so as to be acceptable under a review: a single brood chamber, treated with a full dose treatment (two strips), placed

<sup>1</sup><http://www.wipo.int/edocs/lexdocs/laws/en/eu/eu159en.pdf>

<sup>2</sup>Stefan Bogdanov, et al.(2002). Determination of residues in honey after treatments with formic and oxalic acid under field conditions. *Apidologie*, Springer Verlag (Germany), 2002, 33 (4), pp.399-409. <10.1051/apido:2002029>. <hal-00891665>





on top of the frames of the brood chambers, then a queen excluder, followed by a nine-frame honey super of drawn comb. Each frame in the super was labeled with its hive identifier and numbered from one to nine. It was determined that the product would remain in place for three weeks even though the treatment period was two weeks. The study was set up as a side-by-side comparison, therefore the three treatments used were MAQS+ (Formic Pro™), MAQS™ as a positive control, and a placebo application as a negative control. Three sampling points were pre-determined: seven, 14 and 21 days after application. At

each sampling point three frames would be removed: Day Seven, frames numbered one, four and seven, at Day 14 frames numbered two, five and eight, and at Day 21, frames numbered three, six and nine. To avoid any contamination the bees were shaken off and the frames were kept separate from one another by location and treatment group. These were kept overnight in an unheated room and extracted the next day in a small, three-frame extractor. Once extracted, the honey samples were frozen until analyzed.

A light honey flow was underway in the two locations on the first day of Summer, June 21, 2016. The

treatments were applied on June 22, removing the spent strips applied a month earlier. With 10 hives in each of the three treatment groups, split into two locations, some colonies were not strong enough to have any honey stored in the honey supers, but by Day Seven at least two of the five hives in each treatment group location had enough honey in the designated frames to provide several pounds of honey. Despite the drier than normal conditions the light flow continued, allowing the study to be completed.

Figure 1 demonstrates the level of formic acid in the hive at mid-treatment (Day 7), end of treatment (Day 14), and one week after treatment, noting that the strips had not been removed from the hive the entire time. Figure 2 demonstrates the total free acidity in the same time frame.

Although there was some variation in formic acid levels present between locations, at no time during or post treatment did the levels of formic acid or total free acids exceed the standards set out in legislation or what is expected to naturally occur. Formic acid levels appeared to be somewhat self-levelling within honey, likely due to its volatility and the

Figure 1.

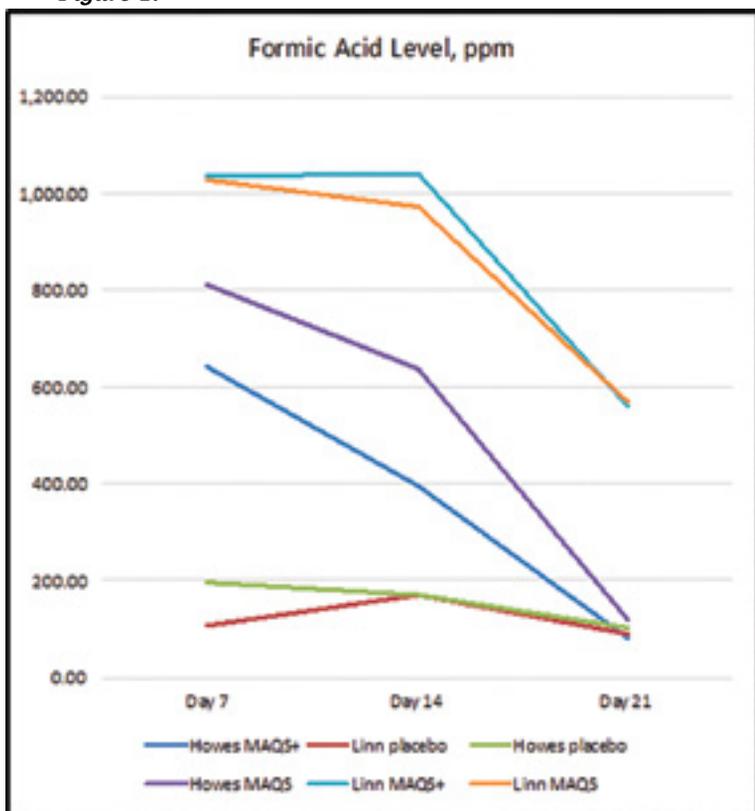
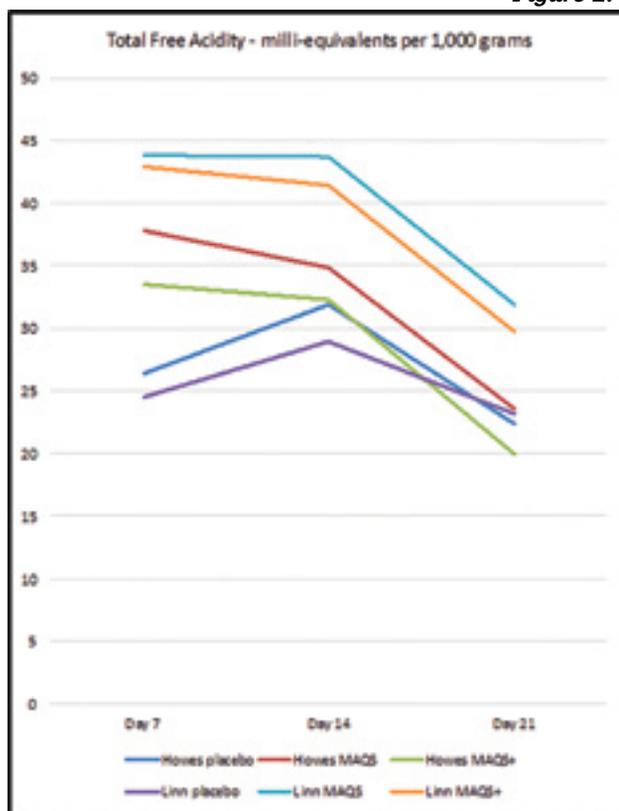


Figure 2.





complexity of honey as a substance. Indeed, a week after treatment was considered to be completed (Day 21), some of the test product treated hives had levels of formic acid in honey that were lower than the levels determined in the placebo control colonies, further evidence of the high variability of formic acid levels naturally found in honey.

### The Label

Returning to the registration process for a biopesticide, everything revolves around the label. There is a good reason for this: the label is the information exchange point between the miticide developer and the consumer, while conforming to regulatory requirements. At the start of the application process a draft label is provided to the EPA as part

of the dossier. There can be nothing on the label that is not scientifically supported. The EPA also has clear guidelines on what needs to be addressed. Here at NOD we review the label and trending reports quarterly, to ensure that it is as clear as possible and is in compliance with up-to-date standards, while also reflecting on consumer feedback.

The process of applying for a registration is set out in the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as mentioned at the start of this article. The EPA's data requirements and the method of presenting these data requirements are all set out. It is beyond the scope of this series of articles to walk the reader through the labyrinth of requirements, however if one follows the link to the EPA website provided at the start of this article there is plenty of information available. Once an application is made for a new

pesticide with a new active ingredient, it can take a couple of years for the application to make its way through the EPA review process. After the initial approval, the review process of subsequent formulations is likely to be reduced to several months.

Once a biopesticide is through the Federal EPA assessment process it still cannot be sold until a State registration is granted. Each State can impose its own regulations, requirements and fees. They are highly variable, so it takes a while for an EPA granted registration to make its way through the process of being registered in all States.

### Conclusion

All things taken into consideration, it requires a significant investment in innovation, time and money to bring an effective, sustainable, environmentally friendly miticide to the beekeeping industry. But for our love for the honey bee we would not have taken on the task, and we gratefully thank the many supporters of our efforts, those souls dedicated to honey bee health within the beekeeping community, the scientific community, and the regulatory community, especially the State Apiarists. **BC**



# FOUND IN TRANSLATION

## *Virus Variety*

Jay Evans, USDA Beltsville Bee Lab



There is a time bomb ticking off the Brazilian coast. In the Open Access journal *Scientific Reports*, Brettell and Martin present new data on virus levels and virus diversity in an enigmatic population of honey bees that has survived *Varroa* mites without treatment for decades (DOI: 10.1038/srep45953). First established in 1984, the honey bees of Isla Fernando de Noronha, far off the Atlantic coast of Brazil, are comprised of Italian honey bee stock from the United States (California queens inseminated by Georgia males). No bees were present on this extremely remote island, nor on its equatorial neighbors, and the population has yet to mix with Africanized bees or any other honey bee races.

The honey bees of Fernando de Noronha did not escape *Varroa* mites in 1984, and in fact mite loads were extremely high early in the history of this population. David deJong and Espencer Soares measured average loads of 26 mites per 100 bees in 1991 and while those loads decreased in subsequent years they remained far higher than sustainable mite loads in most honey bee populations (deJong and Soares, 1997, *American Bee Journal*, October, pp. 742-745). As with the rest of Brazil, chemical controls were not used to control *Varroa* and these bees have flourished despite the presence of mites. In 2015, Brettell and Martin found that average mite loads from this population were substantially lower, up to two mites per 100 bees and in line with colonies in other parts of the world. No signs of viral disease or other symptoms of mite-related disease have ever been seen in these bees.

Brettell and Martin used sensitive genetic tests to screen colonies for Deformed wing virus (DWV).

To their surprise, they found this mite-associated virus despite never seeing its eponymous trait in infected bees. DWV levels were extremely low, similar to levels seen in honey bees populations that have never been exposed to *Varroa* mites. Low virus levels and no ill effects could reflect virus resistance by the bees of Fernando de Noronha or exposure to viral strains that are not aggressively virulent. Brettell and Martin feel the latter scenario best explains the good health of these island bees.

Improved genetic tests have led to extensive surveys of diversity within DWV and the other major bee viruses. Most honey bee viruses persist as (appropriately) a swarm of variants, some of which are more damaging to their bee hosts but all of which infect bees at some level. This variation reflects exceedingly high mutation rates for DWV and other viruses, followed by ongoing selection favoring winning viral types that can make the most copies in cells of their bee hosts. These successful viral strains go hand in hand with more damaging effects on bees. Several recent studies, most notably by Martin and colleagues and by the group of Lena Wilfert at the University of Exeter, England, have shown that the presence of *Varroa* mites in some way selects for specific DWV strains that rocket to prominence. In other words, regions in which DWV is especially troublesome for bees tend to show a smaller subset of viral diversity. Viral winners are not universal at the level of continents, thanks to controls over the movement of bees, yet nearly all of the successful DWV variants seem to arise from one branch of this viral group. One notable exception is a highly successful DWV variant called DWV-B (or *Varroa* destructor virus), which causes widespread bee damage

in much of Europe. As a further twist, Eugene Ryabov and colleagues have shown that recombinant viruses with a protein coat resembling DWV-B and inner enzymes closest to DWV-A (the worldwide 'classic' successful DWV strain) are the worst news for bees in England, growing to high levels and causing heavy disease symptoms. Viruses are asexual and it takes a unique and rare event for strains to merge together. Accordingly, when such mergers are seen they must reflect superior growth in bees, or a better ability to survive in bees or their mite vectors.

Back to the tiny island of Fernando de Noronha off the Atlantic coast of Brazil. Brettell and Martin showed a diverse assemblage of viruses in this population. Intriguingly, they did not see signs of any of the predominant viral strains found elsewhere in mite-infested bees. In fact, they saw what appear to be numerous mild viral strains at low levels which seem tolerable to bee hosts. Their time bomb analogy comes from the fact that it might take only a freak mutation or a human assist to introduce a more virulent strain of DWV into this bee population. If that occurs, they suggest that 30+ years of population stability in the face of *Varroa* could come to a sudden end. This last hypothesis, if true, could inform better ways to manage mites and viruses, and in particular the regulation of bee and virus exposures across populations. **BC**

This article will conclude the series on foraging book reviews. “Midwest Foraging-115 Wild and Flavorful Edibles from Burdock to Wild Peach” by Lisa M. Rose (ISBN 978-1-60469-531-1, 318 pgs.) was published by Timber Press.

The title covers the Dakotas, Nebraska, Kansas, Minnesota, Iowa, Missouri, Wisconsin, Illinois, Indiana, Michigan, and Ohio as well as parts of Canada. This particular volume profiles an especially large number of pollinator species – more than 80. For that reason, I highly recommend it to beekeepers.

The in-depth guide to the basics on foraging stresses sustainability and safety. In addition, it also covers food preservation methods and the importance of proper plant ID. The very helpful, reader friendly, illustrated guide to leaf shapes will be a valuable aid in identifying plants.

The author also covers the types of habitats and areas where it might be unsafe to forage. The seasonal foraging guide lists the edible species that can be found in each of the various habitats. There are even a few edibles that can be collected during the Winter.

The plants are arranged alphabetically by common name. The individual, comprehensive plant profiles include the common and Latin names, the edible plant part/parts, a plant description, when and where to harvest, and how to prepare and preserve it. In some cases, the author discusses sustainability issues. When appropriate, she also promotes the cultivation of certain species.

The author strongly discourages readers from harvesting vulnerable species, such as ramps – a type of wild edible onion relative. On the other hand, she urges foragers to collect the edible ones that are invasive.

As one might expect, some of the same plants are found in more than one volume in this series. This one features a number of pollinator plants that I’ve mentioned in earlier reviews.

The majority of the pollinator plants in this volume have been either profiled or at least mentioned in earlier articles for *Bee Culture*. Concerning the remaining pollinator species, I can also recommend the following as good bee plants.

Some pollinator plant species

# Midwest Foraging

Connie Krochmal

that can result in surplus honey include ground nut and wild lettuce. Both jewelweed and wild sarsaparilla can bring good crops of honey in addition to pollen. Some woody plants that offer nectar and pollen are sassafras, spicebush, and pawpaw.

The wild carrot or Queen Anne’s lace is considered a good bee plant in some areas. A source of nectar and pollen, this species can sometimes bring a small harvest of honey. I hope to include more information about this naturalized species in a future article.

Additional species that bring nectar are Solomon’s seal and the invasive garlic mustard. Pollen comes from the beeches and birches.

The flowers of white lettuce, a native species, are known to attract honey bees. However, sources disagree as to whether it produces nectar or pollen.

One additional pollinator plant recommended by the author is the everlasting or perennial sweet pea (*Lathyrus latifolius*). This species is a good nectar plant that can sometimes yield honey.

On the other hand, I do urge readers to be very careful to avoid confusing this sweet pea with a relative that can be toxic. My concern is that foragers might mistakenly collect the dried pods of a related species, the chickling pea (*Lathyrus sativus*). Also known as grass pea, it can be toxic when large quantities are consumed.

This poisonous species causes lathyrism, which results in a sudden, incurable paralysis. During times of famine, the plant has caused epidemics of lathyrism in various areas around the world.

The potentially harmful species has been introduced to the U.S. It has naturalized in a number of states, including California, Oregon, Wisconsin, Maryland, and Massachusetts.

In addition to those pollinator plants, here are detailed profiles of two additional species. These are

motherwort – an herb – and the common garden asparagus. Both of these were introduced from Europe and naturalized in the U.S.

## MOTHERWORT (*Leonurus cardiaca*)

Native to much of Europe, this perennial herb is now found in all of the lower 48 states with the exceptions of Florida and California. The plant frequents waste places, pastures, disturbed sites, open fields, old farmyards, abandoned factory grounds, roadsides, and trails. Motherwort can be a weed in gardens and landscapes and around homes.

This species was used medicinally by the ancient Greeks. In Japan, it is celebrated during the Motherwort Flowers Festival.

The plant was recommended by herbalist Nicholas Culpeper as well as by John Gerard in “The Herball,” published in 1633. The 16<sup>th</sup> century German herbalist Leonhart Fuchs also wrote about this species.

Motherwort was introduced to America during the Colonial Era and appears in garden books from this



Motherwort.

period. Some sources report that Johnny Appleseed also carried seeds of some herbs, including motherwort, as he traveled the country planting apple seeds. A member of the mint family, motherwort can sometimes cause dermatitis in susceptible individuals.

#### Description of Motherwort

The genus name is from the Greek and means lion's tail. The aromatic, drought tolerant, perennial herb is generally two to six feet in height with a spread of two to three feet.

The square stem is typical of the mint family. Especially suited to poor soils, this erect, upright plant features prickly, opposite, somewhat drooping, lance-like leaves that appear on long petioles. These can contain three to five deep lobes.

Four inches across, the green leaves are whitish and hairy underneath. The upper foliage contains three, hairy lobes that can be toothed. The lower leaves are generally palmately lobed.

Motherwort can begin flowering as early as May. Blooming can extend into November, depending on the climate. The axillary, hairy, tubular, sage-like, two-lipped blooms resemble those of other species in the mint family. These appear on crowded, leafy flower spikes, which contain small, numerous whorls with six to twelve blooms.

The blossoms vary in color from white or pastel pink to pale purple or pinkish-purple. They have a five-veined, bell-like calyx with five, pointed, spiny lobes and a tubular, very hairy corolla that is purple and yellow.

#### Growing Motherwort

I'm somewhat reluctant to recommend that beekeepers grow this particular species because it naturalizes so easily and can become quite weedy. In fact, motherwort is often considered to be a weed by many gardeners. Nonetheless, the plant still doesn't appear to be as aggressive as most invasive species.

This adaptable, reliable herb self sows very readily. The fact that it produces a lot of seeds serves to aid its spread. In the event that any beekeepers choose to cultivate this plant, I would highly recommend that they remove the flower stalks

once the blooms have dried. This will help to prevent the plants from setting seeds.

#### Bee Value of Motherwort

Motherwort is a valuable bee plant with the flowers being a favorite of bees. It is an excellent source of nectar and an almost equally good pollen source.

In some regions, this herb is a good honey plant largely due to its long blooming season, which can sometimes be two to four months or so. This yields 0.12 mg nectar per flower daily. Even during drought, motherwort serves as a reliable source of honey.

This can provide a honey surplus of a hundred pounds or more per hive, in some locations. Motherwort honey has a light, mild flavor with a straw color.

#### **ASPARAGUS** (*Asparagus officinalis*)

Native to coastal areas of Europe and Asia, asparagus has naturalized in the U.S. It occurs in all mainland states. The plant inhabits hedgerows, thickets, waste places, open trails, and old fields. This crop is grown commercially in Washington, Michigan, New Jersey, Massachusetts, and California.

Asparagus has served as a food since ancient times. While the ancient Greeks preferred asparagus spears harvested from the wild plants, the Romans grew this as a vegetable. The plant was brought to North America by European colonists.

#### Description of Asparagus

Asparagus belongs to the lily family. The smooth, much branched stems arise from a woody crown. Three to five feet tall, the plant is somewhat long lived—a decade or more. The small, fern-like leaves are thin.

Asparagus can bloom over a long period from March to August or so, according to the location. An individual stalk typically bears flowers for about three weeks. The blossoms release a distinctive odor.

These open on an upright flowering stalk, four to six feet tall. The nodding, bell-like, very small flowers, one-fourth inch long, can be greenish, greenish-yellow, or greenish-white. These blooms form axillary clusters containing up to four flowers.

An individual asparagus plant will bear either male or female blossoms. Both types of blooms have nectaries at the base of the corollas. The male flowers are larger and more conspicuous with an inner and outer whorl that contains three stamens.

Borne by female plants, the small, hooked, round berries are 3/8 inch across. Fruits can contain up to six seeds.

#### Growing Asparagus

Full sun and a well drained soil are needed for this crop. A light, porous soil is best. Silt and light sandy loams are also good.

Heavy soils are generally less suitable, although certain asparagus varieties are more tolerant of such conditions. A pH range of 6.0 to 7.7 or so is acceptable.

Propagated by seeds and crowns, asparagus can be planted in the Fall or Spring, depending on the climate. Recommended for zones three through eight, this crop requires a dormancy period, which can be induced by cold temperatures or drought.

A number of asparagus varieties are available. Sprouting in one to two weeks, the seeds can be direct sown or started them early indoors. Avoid covering them.

Plant asparagus crowns in the Spring as soon as the ground can be worked or in the Fall. Prior to planting crowns, till the soil to a depth of six to eight inches. Amend the soil with rotted manure, compost, and fertilizer.

Space asparagus plants two to three feet apart within rows that are four feet apart. Plant the crowns around six to eight inches deep with the roots spread out and the buds on the top. Initially, cover them with several inches of soil.

Once the first shoots begin to appear, cover crowns with several additional inches of soil. Repeat this procedure several times until the soil surface of the bed is level and the crowns are six to eight inches deep.

For best results, keep the asparagus bed free of weeds. Water as needed to keep the soil moist until this becomes well established. Apply fertilizer annually during the Spring.

Potential problems of asparagus include asparagus beetles and slugs along with fusarium wilt. Rust can occur although there are resistant



Asparagus

varieties.

When asparagus crowns are planted, gardeners can expect a light harvest during the second and third years after planting. If grown from seeds, an additional year is required. The harvest season lasts for three weeks or so.

#### Bee Value of Asparagus

Bees find asparagus blossoms to be very attractive. These bear lots of nectar and pollen. The orange, oblong to round pollen grains are fairly small.

Bees work the flowers throughout the daylight hours until dark. The blooms are particularly rich in nectar. When conditions are favorable, the nectar flow can be especially heavy and result in a large crop of honey.

The plant is an important, reliable honey source in some areas. The rather thin bodied honey is slow to granulate. With a mild flavor, this

can vary somewhat in color.

Generally, it ranges from very light amber or light amber to dark amber. In some cases, asparagus honey can have a greenish tinge.

So far as the quality of the honey is concerned, It can vary somewhat. This mostly ranges from fair quality to somewhat lower quality.

#### Pollination of Asparagus

For a good crop of asparagus seeds, cross-pollination is required. Commercial production of asparagus seed relies primarily on honey bees for pollination. One to two colonies per acre is recommended for asparagus seed fields. There should be one male plant for every six females with the males being within five feet of the females. **BC**

*Connie Krochmal is a beekeeper, writer and plant expert living in Black Mountain, North Carolina.*

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# Beekeeping In Costa Rica

Sarah **Gabric**



## Pura Vida – It's All Good

Everywhere you might go in Costa Rica, from the capital city of San Jose, to a remote barrio, to a tourist hub like Manuel Antonio you hear people saying “Pura Vida”, Pure Life. This salutation is used to say hello, thank-you, you're welcome, take care, or like an American might say, it's all good, or take it easy. It is also used to describe someone who is laid back like “You know Jose, he's so pura vida”. That pura vida is both an ethos and a philosophy was explained to my husband Jeff and I on a recent trip to Costa Rica in the form of a story. This is my translation of the narrative we were told by a local Tico, Costa Rican:

*A fisherman went out one day in his humble boat and came back with a good catch – four large fish. On the shore, he sold them to a businessman who said to him “Do you know if you went back out today and caught four more fish like this you could earn twice this money and if you did that every day for several months you could buy a bigger boat and better poles? Then you could catch twice as many fish as before and after several years you could make enough to buy a whole fleet of boats and so on...” The fisherman thought for a minute and said “But if I went out again today I would have no time to spend with my family and friends and enjoy my life.”*

The fisherman made the pura vida choice: to take pleasure in what he had, to appreciate the simple gifts of life without scrabbling and scrambling for more. The young man who told us this story offered an interesting explanation as to why the spirit of pura vida may be so attractive to his people. He postulated that in addition to the relaxed optimism embedded in the pura vida attitude, having a philosophical orientation of acceptance helps the Tican people feel less frustrated by the difficulty they

encounter when/if they try to climb the socio-economic ladder from low-to-middle or middle-to-high earning status.

The palpable pride every single Tican we spoke with exuded as they described how their country has no army, “we are a peaceful people” and how the money that would have been spent on a military goes to pay for education and healthcare, how they are friends to everyone and try to live in harmony, was arresting and enviable.

Costa Rica is the most splendidly lush garden of ecological paradise imaginable. The natural world howls, barks, zips, whirrs, clicks, buzzes and squeaks with life beneath the unbridled splendor, intense color, endless variation and gracious arms of among countless others,





AHB hive.

the Guanacaste trees, which stand stately, stretching their broad branches, draped as if with jewels, with orchids and bromeliads. Intimately connected with all this teeming life, almost invisible among the larger more glamorous plants and animals, are the bees.

Looking about, on the blossoms, which were everywhere, we did not at first see what we recognized as honey bees, but rather what looked like hundreds and thousands of tiny, pollen-laden flies. We were soon to learn better on an excursion to Reserva Natural Tocori.

Having spoken with Miguel Gamboa, the owner and primary beekeeper of the reserve we knew we would encounter Africanized bees but really had little more than that to go on. As we drove out of town and into the countryside the roads became steadily bumpier and dustier. We eventually climbed a small mountain to arrive in a primeval-feeling forest where Miguel and his family tend 18 hives of Africanized honey bees (AHB), a few colonies of stingless bees, and a curated educational center and hiking trails.



Jeff and Miguel in AHB hive.

**Africanized honey bees** Before describing the wonders we experienced allow me to jump back in time. Forty years ago, backyard beekeeping was a common practice in Costa Rica, requiring little specialized gear; just some homemade hives, a few bees and a little knowhow. Then around 35 years ago, the Africanized honey bee, a hybrid of the European honey bee (EHB) and an African subspecies *Apis mellifera scutellata*, arrived. The Africanized bees, owing to their strong genetics quickly began to dominate and though comingling occurred the AHB genetics came to profoundly influence the local honey bee population.

Most casual beekeepers in Costa Rica intimidated by the now highly defensive and at times aggressive temperaments of their formerly mellow bees, abandoned the practice. Some seasoned beekeepers adapted, adopting more protective gear and using more smoke and found that the new bees, though lacking “good humor” were usually manageable and excellent honey producers.

We went to visit just such bees. Tucked away in sparsely treed groves, each hive was situated about 30 ft. from the next. The supers sat upon stands beneath sheltering roofs constructed to protect against the intense sun of the dry season and the drenching rains of the wet season. With some trepidation and outfitted so soundly a midge couldn't have gotten into our suits we approached a colorful, modest hive of two deep supers. The inhabitants did not rush out to attack. Miguel smoked the entrance liberally and removed the cover. A few guards flew up, buzzing and banging, to check us out. I was still holding my breath. We began to pull frames. The honey-pollen-brood rainbows were lovely. The workers walking about on the comb were tranquil. They were dead ringers for Italians, some as yellow as Cordovans, other darker, no smaller or larger, looking for all the world exactly like a colony from home but with not a *Varroa* mite to be espied.

Embarrassingly, truth be told, though I knew better, I was expecting something sensational, almost cartoonish: huge evil bees, stingers brandished and dripping venom, malice in their eyes, murder in their hearts. Obviously the AHB are not cuddly kittens neither however were these guys ‘killers’.

Apiculture in the tropics, as in the temperate zone of Ohio is dictated by the rhythms of the natural world. In Costa Rica there are two seasons: wet and dry. The wet season, in the central west coast region we visited, begins in mid-April and lasts for about eight months, giving way to the dry season in mid-December. From mid-December to mid-April, four short months with lots of sun and very little precipitation, everything that can bloom, seemingly does. Miguel mentioned several trees whose blooms are of particular importance to the honey bees including the Guititi tree, *Acnistus arborescens*, the Apple Water tree, *syzygium samarangense*, the Mango tree *Mangifera indica*, the Blackwood tree, *Gliricidia sepium*, which grow in abundance and are used as living fence rows and the Wild Cashew tree *Anacardium excelsum*.

During this time of plenty, Miguel's hive populations, which over the rainy season dwindle from 40,000 or so individuals to under 8,000, surge. The queen begins to lay again in earnest, the nurses to nurse, the foragers to forage and the hives boom. Of course, with all this vigor and vim comes the urge to swarm, and just like during strong late Spring nectar flows in Ohio when the hives

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Unidentified  
Melipona.

that are in addition to making flying a far less attractive adventure. He allows the bees to keep the honey they make at the very tail end of the dry season from nectar of the May tree (*Crataegus sp.*) which he describes as very bitter and he feeds, a mixture of sugar-cane and water, as needed. During the rainy season the queen dramatically reduces drone production and as the old fellows die off and are not replaced, attrition negates the need for the dramatic exclusion/execution of the drones we see in Ohio around Labor Day.

Miguel sells most of the honey he collects at a nearby market for the equivalent of \$6 per lb. He rarely collects pollen, as he believes it's not good for the bees, but does harvest propolis, royal jelly and wax which he and his daughter Yeimi use to make natural creams and cosmetics. Miguel is often asked to transport his hives to watermelon and cantaloupe fields for pollination but declines because of the many pesticides used on these crops. He doesn't want to expose his bees to the poisons – pura vida.

Miguel does not use chemicals to treat for *Varroa*. He tells us that about six years ago, his hives, which were at that time lined up with just a few feet between stands, experienced a major *Varroa* infestation. His response and remedy was to move the hives at least 30 ft. apart, to discourage drift and continual cross contamination and to destroy brood comb. It worked. His efforts were also likely aided by the strongly hygienic behaviors attributed to AHB.

Costa Rican beekeepers, as far as Miguel knows, have no problems with *Nosema apis* or *ceranae*, American Foulbrood or European Foulbrood. Nor are the hives bothered much by the likes of rodents or larger mammals (other than people). They must contend however with one madly formidable foe: the army or legionnaire ants (*Eciton burchellii*). These nomadic predatory hordes, often numbering in excess of ½ million individuals, upon discovering a colony, invade and devastate, consuming eggs, larvae, and food stores and after pillaging and plundering slip silently back into the undergrowth from whence they came. Miguel lost four hives to army ants last year.

Exploring AHB hives, though precarious and compelling in theory, turned out to be not that different of an experience than looking into a fellow Ohioan beekeeper's ill-tempered hive. It was interesting for sure, but familiar enough to seem almost routine. If what we were hoping for was something exotic and astonishing, which of course it was, our hopes were to be exceeded by what Miguel showed us next: *Melipona* and more *Melipona*.

**Melipona** *Melipona* or stingless honey bees are ubiquitous in the tropics. We encountered only two on this trip that we were able to identify though doubtless saw others. The first was *Melipona costarricensis*, also known as *Melipona beecheii*, referred to locally as "Jicote Zoncuano" (the wasp of Zoncuano). In other parts of Central America and Mexico this native bee which has been kept, primarily in log hives, since pre-Columbian times is referred to as the Xunan Kabee or Royal Lady Bee.

These eusocial, nonaggressive, dark-colored bees live in small colonies of 500-2,500 individuals. We encountered very similar bees in Cuba five years ago, called by the locals *atehas de la tierra*, ground bees. (for

begin to feel congested, preparations for cleavage are made. Miguel tries to capture as many swarms as possible and often receives calls from the local fire department asking him to remove bees from people's sheds, trees and homes.

By mid-March, when we were visiting, Miguel was about to harvest for the third time in six weeks. Despite the comparatively small head count (40,000 AHB per colony vs. 80,000 EHB) honey production was impressive with each colony generating an average of 80 lbs. over the four-month dry season. This honey, stored in frames of naturally drawn comb on wires, Miguel harvests in a handcrafted tangential extractor. His supers and frames are handmade as well utilizing the wood of local trees such as Cedar, Mango and Guanacaste.

After harvesting Miguel must ensure that the bees have enough stores to get them through the long, wet season. Far fewer plants are in bloom during this time. The daily rains wash out the pollen and nectar of those



*Tetragonisca angustula*, angel bee, at hive entrance.



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Interior of *Tetragonisca angustula* hive.

a full description see the article titled *Beekeeping in Cuba, Bee Culture*, Sept 2013). These sweet bees, as they are also called, store nectar and pollen, collected via buzz pollinating (like bumble bees) in waxen pots situated around the brood nest which is constructed of horizontally oriented comb layers Miguel called cookies.

Over the legions of years that *Melipona costarricensis* has been in Costa Rica it has become a vital member of the ecosystem, but the same sad story is repeating there as elsewhere: declining numbers primarily due to habitat loss from deforestation threaten its continued existence. Miguel tells us these beleaguered natives also must contend with the parasitic phorid fly, *Psuedohypocera kerteszi*, which invade nests during the rainy season when colonies are at their weakest. During this time the female phorid or scuttle fly infiltrates the *Melipona* nest and lays batched eggs in pollen pots and brood comb. Her larvae hatch and consume pollen and the nascent *Melipona* larvae and pupae. A phorid fly infestation can cause colony death.

**More Melipona** I mentioned that we were secretly, or not so secretly, hoping to see something amazing on this expedition, here it was, in all its Lilliputian splendor: the Mariola bee, *Tetragonisca angustula*, also known the angel bee. Tiny and delicate, four to five mm in length with colony populations of 5,000-10,000 individuals, these delightful bees not only look altogether un-honey-



Interior of *Tetragonisca angustula* hive, open honey pots.

bee-ish, their behavior represents some fascinating departures as well.

For starters, the eusocial angel bee society consists of five (and possibly more) castes. In addition to drones, psyogastric queens and workers, there is a soldier or guard caste; females about a third larger than workers with longer hind legs and a janitorial caste; females bigger than workers but smaller than guards. The evolution of a guard caste is likely a result of the fact that, though stingless, these tiny bees cannot afford to be defenseless. With an average of 30 guards patrolling the nest entrance, a pipe-shaped lattice work of wax measuring about two cm in length with a diameter of 0.6 cm, which the bees close at night, these little soldiers stand a much better chance of detecting and deterring attacks by the much larger obligate robber bees such as *Lestrimelitta limao*.

What I found most interesting about angel bees is their method of colony reproduction. They are said to swarm only once a year, during the dry season. Instead of issuing first and searching for a new nest site second, like *Apis mellifera*, the angel bees, and this just seems to make so much more sense, send out scouts for two days to two weeks to locate a suitable cavity, and then swarm. They don't go far, less than 1,000 feet from the parent hive, but then distance is relative to size. During the move thousands of workers, many of whom will ultimately return to the parent hive, come along to help the new colony get established. These helper-bees clean the new nest site, build comb and transfer pollen, honey and wax from the parent nest to the new nest site. The helpers return after a time to the parent hive and continue to have supportive contact with the swarm for up to six months, until it is fully provisioned and productive.

Miguel tries, with some success, to encourage the angel bees during the swarm season to move into prepared frameless boxes he baits by spaying the interiors with an extract he makes using propolis from the parent hive.

Angel bees seem to be generalist foragers and once we learned to identify them we saw them everywhere which because they don't forage more than 1,200 ft. from their nest means that there were little nests tucked away all over the place. Angel bees of course make honey, called miel de angelita, little angel honey. Miguel harvests it sparingly, for there's not much of it, and like other *Melipona* honey it is greatly prized for its medicinal qualities, especially alleviating eye problems.

The Gamboa family's reserve, with its 18 AHB hives, log hives of *Melipona costarricensis*, hive-ettes of angel bees, educational center, walking trails and fount of knowledge that Miguel possesses and is eager to share, seems to me to exemplify the pura vida ethos. Miguel and his family are deeply connected with and profoundly appreciative of their land; forest, plants, animals and insects thriving beneath the verdant canopy. They have also discovered that tourists, (more than two million last year, a healthy percentage of whom were eco-tourists, people interested in hiking, biking, rafting, surfing, snorkeling, bird-watching and now bee-watching), really like it too. And, happily for us, they've created a cottage industry wherein they share their love and knowledge of the treasure that is their tiny pocket of Costa Rica and earn a living in so doing. Miguel encourages you to contact him via email at [migamb@hotmail.com](mailto:migamb@hotmail.com) if you are interested in visiting. I encourage you also – Pura Vida. **BC**

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# Beekeeping In The Bahamas

Jennifer Berry

*The thought of taking a 12-24 hour old larvae and transforming it into a queen is amazing.*

It's been almost 20 years since I started rearing queens, and, believe it or not, I still find it just as exciting as when I first started. There's something magical about raising your own queens. Taking an average worker larvae and sending her down the path to queendom and lifting her into a life as a royal instead of just another "one of the girls." Hmm, this reminds me of something from when I was a little girl. Ahhh yes, Cinderella and the Disney effect, where all little girls want to be converted into the beautiful princess!

You know the story. Once upon a time there was a young girl who was being mistreated, and hence felt downtrodden and unappreciated. Until one day, a magical fairy Godmother fluttered out of nowhere and began to transform the poor soul. She started by flicking her wand and poof, the perfect makeup flawlessly applied. Another swoosh and bam! Her tangled locks swirled into an awesome hairdo. Next, the Fairy Godmother spun her about and the tattered jeans and t-shirt disappeared being replaced with a beautiful gown decked out with all sorts of bling. But

the best part, when the magic truly took place, was when she stepped into sparkling, glass slippers and KaBOOM! she was a princess to die for!!! You remember how the rest of the story goes. After this amazing transformation takes place, she soon gets the attention of the handsome prince who sweeps her off her feet, places her atop his steed and gallops off into the sunset to live happily ever after in his awesome palace.

Instead of wishing that I could be the princess, now I relate more to being the fairy Godmother, especially when I raise queens. Ok, there are some slight differences here, I'm not able to change pumpkins into carriages or mice into horses, but, a worker into a queen.

So, why did I start rearing my own queens? Several reasons, actually. First of all, the idea really intrigued me. The thought of taking a 12-24 hour old larvae and transforming it into a functioning, robust queen, sounded amazing. Next, I wanted to start selecting for specific traits, such as hygienic behavior (to combat mites), increased brood production (for better honey production), and gentleness (tired of working bees with an attitude). But the main reason I started to raise my own queens (and the lab's), I was tired of queens not being accepted or only lasting a few months before being superseded. In other words, I wanted superior, kick-butt queens heading up my colonies that lasted more than a season. This has proven to **not** be an easy task, but worth it in the long run.

One day, after years of rearing queens, someone asked if I could teach them how to do it. Sure, I thought. This will be fun. Next thing I know, I'm teaching several classes each year. To date I've taught queen rearing classes in Bolivia, Nicaragua, Ireland, England and at various bee meetings across the U.S. Teaching has always been a highlight for me,

especially when I'm teaching about something I LOVE to do: rearing awesome queens.

However, in the last few years I decided to start teaching classes at my farm in Georgia. The decision to stop teaching classes at various meetings and concentrate on having folks come to my farm? Well, it came about due to a few things actually. When I held classes in other locations, there always seemed to be something out of place. It wasn't a bad experience, not at all. The problem was, I didn't have complete control over the classrooms, or the bees, or the lunches, or the number of students, or instrument availability, or the equipment, or the lighting, or – I decided to only teach classes at our farm in Comer, Georgia so I could have complete control over everything. When you are teaching about how to rear superior queens, everything must be in order, otherwise the students may miss out on something.

With that said, I still teach queen rearing to folks in other countries



*Jennifer and Ricky posing in paradise. Check out the blue water in the distance.*






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*First queen rearing class in Exuma.*

and in prisons throughout Georgia since it's a bit difficult to get either 20 students from Nicaragua or inmates out of prison transported to my farm. In these situations it makes more sense for me to travel to them. Plus, it gives me an excuse to travel to some amazing places. This past February I had the wonderful opportunity to teach the first ever queen rearing class in Exuma, one of the many beautiful islands of the Bahamas. Reason it was the first class, well Exuma did not have bees until just recently.

How did the bees come to be? Let's start from the beginning. Exuma, like I mentioned, is a small island district, which is part of the Bahamas. The island is fairly isolated and surrounded by water (imagine, it's an island). Bees would have a hard time traveling there since the island is a good distance from the mainland. It's also fairly new to tourism. Because of this, years ago, a group of concerned citizens formed the Exuma Foundation. In their own

words, "The Mission of The Exuma Foundation is to enhance the quality of life for the people of the island of Exuma in the Bahamas, both now and for future generations to come, by encouraging and managing gifts for operating, capital, and endowment, by addressing community needs through grant making, and by providing philanthropic leadership. The Exuma Foundation (Bahamas) Ltd. seeks to maintain an environmentally sustainable campus that is a catalyst for the educational and community enrichment programs as well as a model of Exuma's indigenous flora and fauna environment."

As you can see, there is a good bit of emphasis to preserve the integrity of the island while encouraging education. Since one of the Foundation's objectives is education and community programs, in 2014, they hired Catherine Booker as their Environmental Educator. For the past several years her objectives have been to help educate folks of all ages about the importance of protecting

the environment (land and sea) and encourage small, sustainable agricultural cottage industries, like beekeeping, for instance. She's also involved with several community initiatives, particularly those that promote marine conservation and national parks, such as the Elizabeth Harbor Conservation Partnership and the Bahamas National Trust. Since she is originally from Savannah and a UGA graduate, she connected with Ted Dennard from Savannah Bee Company and asked for assistance in getting bees to the island. It took a while but they finally managed to bring *Apis mellifera* to the sapphire blue waters of Exuma.

Months later Ted called me and queried if I'd be interested in helping them out by teaching queen rearing and beekeeping. Hmmmm, so let me get this right, you want me to teach queen rearing, on a beautiful island, with crystal clear waters, in January, in the Bahamas, AND get to work bees and teach about rearing queens? Whoa, I need to think about this, for like two seconds. YES, count me in!

So far, the beekeeping venture in Exuma has been a huge success. The bees are extremely gentle, and they're disease free. That's right, no American or European Foul Brood. But, best of all, they are mite-free! Whaaaattt??? That's right, no mites!!! Oh, and no small hive beetles either. They are so healthy, so calm, so sweet, so perfect! I was in heaven working these amazing bees. It brought me



*Charlton Taylor grafting for the first time.*



*Learning how to mark queens isn't easy, so we start with drones.*

back to a time, in the good ole days, before the introduction of mites. Back in the era when bees could be bees! Think about it: mite free, beetle free, disease free, aggression free colonies. It was paradise in so many ways, for the bees and me.

While I was there, I taught two classes: one for advanced students (queen rearing) and a beginning beekeeping course. There were around 15-20 students per section. It couldn't have been better classes. The students were all so excited to learn everything there was about bees but there were two students in particular that really got my attention.

Whenever I begin a queen rearing class, I start off by asking, why are you here? Why do you want to rear your own queens? This gives me some perspective on what the students expect to get out of the class. And this class had many of the same comments that I've heard over the years. "I'm here for the learning experience," or, "I'm here hoping to expand my honey bee operation". But this time, I heard something that I hadn't heard before. "I'm here because I want to rear a better Buckfast bee!". The student's name was Charlton Taylor, and this was his reason for taking the class. That's great! A better Buckfast bee. It's definitely become my favorite answer to date.

Sitting next to him was his younger brother (and the youngest student I've ever had the wonderful opportunity to teach), Ceon Taylor. He too had an answer I had not heard before. "I'm here to help my brother, however I'm in charge of all the honey extracting, bottling and

*Happy colonies.*



labeling. I will be involved with more of the creative side of beekeeping and leave the bees, stings, and heat to my brother." Perfect. These guys make the perfect team and perfect business partners since both are extremely intelligent, motivated and willing to work. Another thing about these two exceptional students that I really appreciated, they did not falter for one minute during the eight hour-long lectures over two-days! Not once did I see the tired, droopy eyelid syndrome (the one that usually attacks right after lunch). Nor did I see any restless movements, foot tapping or wondering eyes. No sighs of boredom or head-rolling, and no drowsy head bobs. I tell you what, for two young men, ages 12 and 14, I was very impressed. No way would I have ever been able to sit there for two days and not have even a single eye closure.

It's been five months now since I was there, and, so far, the bees are still doing great. Some students

from the classes received a free beehive, complete with bees while other students have helped with extracting and bottling honey. The jars are being sold in souvenir shops around the island to help support the beekeeping program. Something else that came out of the class; several of the students were able to fly to Georgia and attend our Young Harris Beekeeping Institute this past May. They also took the certified exam and did exceptionally well.

There are several challenges for the bees of Exuma. One is the bottlenecking of genetics, since only a few colonies from a single source were initially brought onto the island. But the more severe issue facing them would be the illegal importation of bees, which will bring along the most deadly parasite of all: *Varroa*. But for now, the bees are happy, disease, beetle and mite free. Yep, they're all singing away as they're flying about the island, possibly a song from another Disney film, which I'm sure you'll remember . . . Be good to you and your bees!

Zip-a-dee-doo-dah, zip-a-dee-ay  
My, oh, my, what a wonderful day  
Plenty of sunshine headin' my way  
Zip-a-dee-doo-dah, zip-a-dee-ay! **BC**

*Jennifer Berry is the Research Leader at the University of Georgia Honey Bee Lab.*

*Kevin Brown of Cat Island, Catherine Booker of Exuma Foundation and Dr. Deandra Delancey of the Ministry of Agriculture.*





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# Beeyard Thoughts, Observations, and Updates

James E. Tew



*Well, is it European Foulbrood or not?*

*Comb – much more than a hive product.*

*Odds and Ends – Adding wax to plastic foundation.*

## Well, is it European foulbrood or not?

As I was preparing to depart for the 2017 Heartland Apicultural Society (HAS) annual meeting in Evansville, IN, I took a quick last look at two colonies that I have temporarily put behind my shop. Just a day before I had transferred these two colonies from nuc boxes to full deeps. Queens that were purchased for \$35 each headed these two units. I bought two queens from the same producer last year and found them to be absolutely great. I was expecting the same this year, but – no – I found that both of these colonies were filled with European foulbrood (EFB).

Beekeepers, I have not seen true EFB in decades. Indeed, in several previous articles, I have asked what happened to this old annoying, but manageable disease? Well, here it is, in two nucs headed by \$70 worth of queens. This was a true surprise immediately followed by sentiments of both disappointment and annoyance. By now, these two should have been beautiful colonies.

Could anything more happen to these two units? Yes, it could. As I was looking and wondering about these afflicted colonies, I began to see clear signs of robbing behavior at the hive entrance of one of the beleaguered colonies.

Ironically, this destructive activity is not new to these two nucs. I made the nucleus colonies in my home yard, which is about 75 yards away. A day later, I was having a beeyard walkabout and discovered that these two nucs were under heavy attack from their unfriendly neighboring colonies.

*Note to you and me both – if only a weak nectar flow is underway, be very careful when making up nucs in a yard that has other powerful colonies. Under dire conditions, any food resource is fair game to any bee colony. Robbing becomes probable. Small colonies are vulnerable first.*

As reported above, I moved the two bullied nucs to a new location behind my shop and reduced the entrances. I essentially hid them in the foliage canopy of large day lilies. I thought I was being sneaky, but I suspect that the robbers knew exactly where these small colonies were relocated. I do not know how robber bees do this, but they seem to always know such things.

I put top feeders on each of them and gave them some pollen substitute. What a good beekeeper I am! I fed them regularly and gave them their space. Good queens. Good food. Protected location. Loving

*A question for you and me – Could this extreme pollen shortage have been the stress factor that allowed EFB to express itself?*

care. These nucs were going to be beautiful. I gave them undisturbed weeks to develop. Yet here they are presenting unexpected problems.

## An aside...

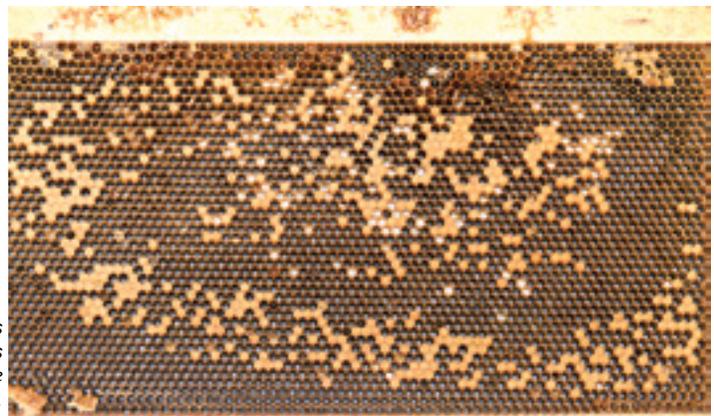
I could not ignore the robbing threat. I could have dead colonies and disease spread to boot. Both colonies had EFB and both were under attack. When I was rummaging around for something to serve as entrance reducers, I remembered that I had two new, unused entrance devices that prevented robbing behavior.

I am not endorsing nor promoting, but these devices have worked very well. They were quick and easy to install. I put them on the colonies that were under attack and, with little time left before departing for HAS, I wished both of them good luck.

Upon my return four days later, the robbing prevention devices had worked and all was quiet.

## No pollen – at all

While I was wondering, tinkering, photographing and pontificating, I noticed that there was NO pollen stored anywhere in these two colonies



*Both colonies had brood nests that looked like this frame.*

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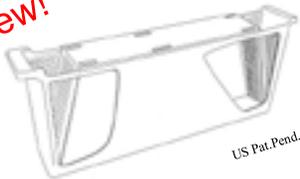
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Commercial robbing screen device that reduced one of this colony's problems.



A single larvae showing infection.

or young larvae. There were only eggs, older larvae and some emerging adults. These colonies did have a lot of open cells and dead/dying larvae. I gave both colonies pollen substitute in an attempt to address this issue. I wonder how my large colonies are faring in my apiary about 75 yards farther back. Were they, too, pollen deprived?



A colony lacking adequate protein eating protein substitute.

### Am I sure that this is this really European foulbrood?

Since I last saw an EFB infection many years ago, Bee Parasitic Mite Syndrome (BPMS) has become common. If *Varroa* infestations are not treated, the affected colony can abruptly collapse. Several years ago, I had that happen to one of my colonies. Initially, BPMS looks a lot like American foulbrood, a much more serious affliction than European foulbrood. It can also have attributes a bit like European foulbrood.

This looks like EFB to me, but I am only highly confident – not totally confident. My colonies have a sour odor, brownish twisted larva and a spotty brood pattern. There are a few punctured cappings, but nothing like the photo showing BPMS. There are some *Varroa* present. That is to be

expected, but there is nothing like the number of visible *Varroa* present in a colony that is collapsing from BPMS.

### So, send samples to the USDA for analysis – and then wait

I will, but I will not have my results for a while. Not wanting to just sit on my gloved hands, I would dearly like to do something while awaiting confirmation. Adding pollen substitute, preventing robbing, and possibly adding a frame or two of young open brood would possibly boost the sick colonies.

Even if I can get the colonies back to good health, the queens' progeny were clearly susceptible to European foulbrood. How far should I go to save these expensive insects? EFB is said to be a "limiting" disease. It does not normally kill the colony, but keeps it weak and unproductive. However, I did pay a lot for these insect monarchs, and they are healthy looking in every way as they roam around their diseased brood nest.

### This ongoing queen thing....

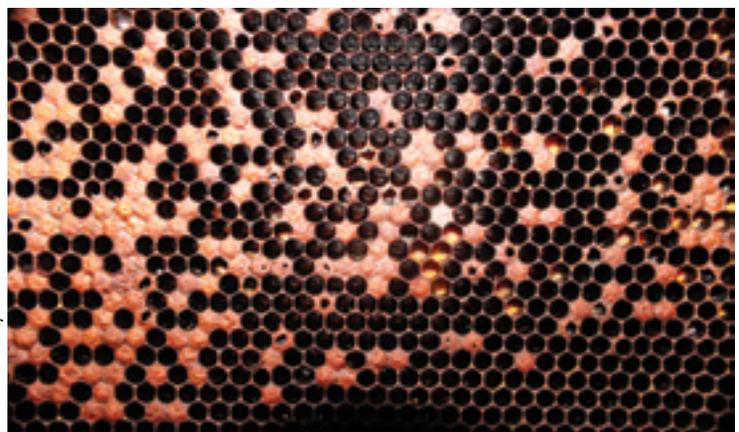
Not now, but in a future article, I will spill my frustrated comments about the current state of queen affairs – their expense, their

unpredictable productivity, their difficult installation process, and the problem with quickly acquiring replacement queens. Buying, installing, and evaluating queens are not what it was a few decades ago. Queen replacement has always been considered major colony surgery, but now the queen replacement procedure is even more demanding with added significant consequences.

### Honey bee Images

The **imaginal** stage of honey bees is the adult, sexually mature, stage. Somewhere in my entomological training, I thought I was told that an imago was a *new adult* – brand new – but the word is simply another term for the adult stage. While I was photographing the various EFB pictures, workers would emerge from their incubation cells. I suppose it could be sappy said that these bees were "baby" adults. In fact, they do have a distinctive look and recognizable behavior.

The big difference is hair, lots and lots of it. It causes their eyes to have a strange black-dot-look rather than distinctive eyes. In the larger format of the pic that I have here, I can see that the head hair and the eye hair



A colony collapsing from a high level of Varroa infestation.

cover much of the compound eyes as to make them only half visible. The three ocelli (eye spots) that are on top of the bee's head, centered between the two compound eyes, are totally covered by soft curly plumose hair.

A new adult bee's color is washed out – nearly translucent – even bland. These bees are feeble, but clumsily active. They are hungry and will immediately begin to check cells. I suppose they are looking for food. I have read that such young bees must learn to solicit food from other workers, and until they have the begging technique down, they don't get fed. Seems harsh.

Capturing micro photos takes a remarkable amount of time. This means that, while setting up and releasing shutters, I have the opportunity to watch various comb behaviors in real time. As I have watched these baby adults, might I offer a radical suggestion?

*Comment to you from me – While taking macro shots of bees and combs, I have begun to notice small details that are missed by a simple perusal of the combs. The macro shot stops the action and gives plenty of time for close – even very close – looks at various activities. I love it when these surprises turn up.*

Cell cleaning is cited as the first task a bee performs<sup>1</sup>. I would suggest that the “immature adult” stage is the first adult stage. To be more dramatic and to include a technical tone, maybe I would suggest “immature imago” but I'm just kidding you with that suggestion.

Seriously, these immature adults cannot fly. They are clumsy but mobile. They have much (so much) hair on all their eyes and ocelli that limit their acuity. They lack chitin or the hard outer body covering. They could be compared to soft-shell crabs. They are essentially unable to sting, and I suspect that most of their glands are only beginning to function. They can barely feed themselves. Looks like a bona fide stage to me. Their first assignment is to *grow up*.

### Royalty Crown Work Box<sup>2</sup>

I recently began to use a device that is positioned atop the hive. I

<sup>1</sup>Winston, Mark L. 1987. *The Biology of the Honey Bee*. Cambridge, MA. Harvard University Press. Winston lists the tasks as: Cell cleaning, capping brood, tending brood, attending queen, receiving nectar, cleaning debris, packing pollen, comb building, Ventilating, guarding, first foraging

make the usual statement: I am not making a general endorsement, but simply telling you what I am using, and how it is working.

It is a multipurpose box that provides creative space for several tasks. Some of the reported uses are: releasing or storing queens and providing a top entrance/exit. It has a removable section that allows the beekeeper to see the top frames without having to open the colony. The device comes with a small, plastic feeder, and there is an entrance (a large hole) near the center that can be used to give the bees access to the interior of the box. Alternatively, it can be closed.



*The Royalty Crown Work Box opened showing the queen port open, as well as the ventilation hole. The upper entrance is the cube shown in the lower right of the photo.*

### Queen storage and introduction

Though the box can be used to feed pollen substitute, I particularly like the potential for storing and introducing queens. Frames of open brood will need to be directly below the queen cage.

While I only have a single box and cannot make broad judgments, the colony that I have the box on has been agreeable and calm as I opened the colony. Normally, I do not use smoke and gloves are not needed. Please note that this calmness may only be a characteristic of this colony or to an ongoing nectar flow.

### Opening the Royalty Box floor

Using the hive tool to pry against the two screws (one is shown in the photo) allows the floorboard to be

<sup>2</sup><http://www.royaltyhives.com/crown-work-box/>

easily and quietly removed. It also goes back in quietly and easily. This feature gives some access to the colony without having to disturb it, or it provides significant space for queen storage.

### Was this a commercial?

The most useful general feature this unit provides is an extra clever working space in an otherwise chock-a-block full structure – a common beehive. There is essentially no space in a hive for a queen cage or even a pollen patty. This box helps with that issue. Also know that this equipment primarily helps beekeepers with a few colonies. It probably would not be practical for more commercially minded beekeepers with greater numbers of hives.

Nothing is perfect. The plastic feeder is smallish and requires frequent filling, and as can be seen in the photo, bees propolize all cracks and crevices. I don't know how this gluing behavior will affect the operation of the unit in years to come.

Please know that I only have one of these Royalty boxes, and I like that one. That's all I'm saying. You should form your own opinion. My comments here are like me telling you that I like my Ford F150 pickup. I'm not a truck salesman and – no – this was not a commercial.

### Odds and Ends

Pete F. was emphatic. He saves all burr combs and wax scrapings. He then melts this and other wax. He adds an additional coating to his foundation inserts. He feels that this extra wax makes his bees a bit more eager to work with the insert and to construct combs. I suspect that he is correct. There is really not much wax on the plastic inserts that we are now using.

Thanks for reading this piece. For those who have written and I've not responded, please know that I try to get to all of you. Thanks for the comments. I read every one – even if I can't always respond. **BC**

*Dr. James E. Tew, State Specialist, Beekeeping, The AL Cooperative Extension System, Auburn Univ; Emeritus Faculty, The OH State Univ. [Tewbee2@gmail.com](mailto:Tewbee2@gmail.com); <http://www.onetew.com>; **One Tew Bee** RSS Feed ([www.onetew.com/feed/](http://www.onetew.com/feed/)); <http://www.facebook.com/tewbee2>; @onetewbee Youtube: [www.youtube.com/user/onetewbee/videos](http://www.youtube.com/user/onetewbee/videos)*



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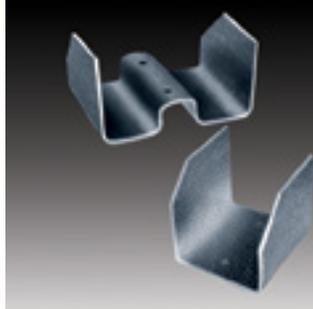
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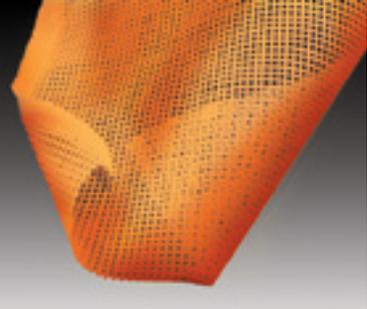
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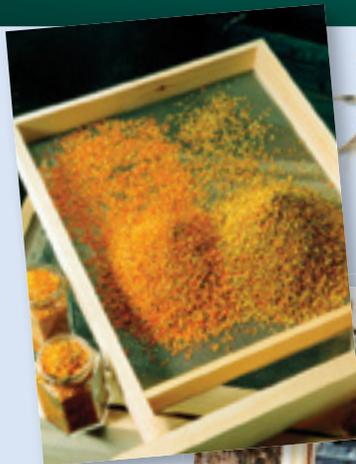
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# History Of The Muth Bottle, Part 2

The first jar invented specifically for honey.

Jim Thompson

*I collect old honey jars and when I heard that the Muth Jar was the **first** jar to have been specifically made for honey, I had to check dates, because there were several bottles that were made for honey around the time that the Muth jar came on the scene in America. From this start, a colorful history emerged.*

*The one pound Muth jar is a square jar that is 6½" tall. Traditionally this type of jar was used for pickles and horseradish. Many people used a jar of this type only with the embossing of their names, so what makes it a Muth jar is the embossing of the beekeeping scene on the bottle. Therefore I will be looking at the bottles or jars from six producers or people that produced honey.*

**A.I. Root Company's** earliest catalog in my collection is the 1879 issue which mentions one and two pound square jars and a quart mason jar for the storage of honey. In 1888, the square jars were further identified as they would be shipped out of Cincinnati. Therefore it was an indication that they were Muth

jars. In 1891, the Muth Jars were offered in four sizes: two pound, one pound, ½ pound, and five ounces. There were also honey tins, tumblers, and a 12 paneled flint glass jar available for honey, but it seemed that the Muth jars were preferred. By 1900, you would notice that in the glass packages for honey: listed the Eastern Square Jars, Muth Square Jars, and Poudier Square Jars. The Eastern Square jars would be shipped from either Philadelphia or New York, which means from Selser or Stringham. In later years the Root Company would only advertise the Warranted honey jars.



1901 line of A.I. Root Glass Packages for Honey

**William A. Selser**, was a businessman that lived in Philadelphia. He was a partner in the firm of Selser, Meurer & Company, manufacturers of fine morocco leather. In 1887, Selser purchased a three acre estate adjoining the H.H. Lippincott property in Wyncote, PA. Because Lippincott was suspicious of Selser's activities, he put the following restrictions in the deed. "That his building to be erected thereon shall at [no] time thereafter be used for the manufacture of soap, candles, glue, starch, Lamp Black, White Lead, or gunpowder, or as a



Wm. Selser's Bee Jar for extracted honey

bone boiling establishment or for any other offensive purpose or occupation whatsoever, and no spirituous liquors shall ever be sold on the said premises." Perhaps Selser had a revengeful spirit because he named the access road to his property, Curacoa Avenue after his company's specially product. Curacoa, is fine goat leather that was used for kid gloves and high end clothing. After he moved back to Philadelphia, the citizens of Wyncote renamed Curacoa Avenue to Maple Avenue. Evidently they didn't care for his sense of humor.

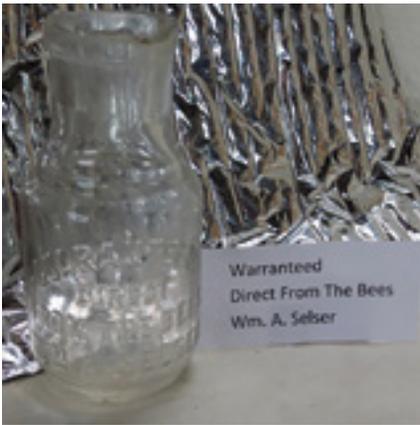
I acquired a couple of business envelopes that showed that Selser and his brother were in the foreign and domestic fruit business in Philadelphia at 28 North Delaware Avenue and at 29 North Water Street. Two business at the same time with different addresses? No wonder H.H. Lippincott was skeptical of Selsers activities.

I know of four bottles that William Selser had made for bottling



Warranted Honey Jars that could have Powder or A.I. Root embossing.

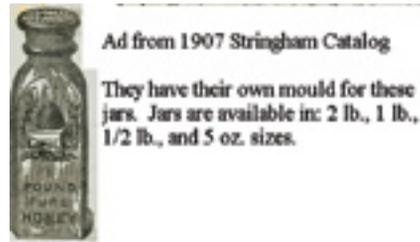




his honey. The most spectacular one is "The Bee." Although I don't have one of these bottles, some have been found in a Washington DC dig in 2003 and one was found in a 2008 privy dig in Allentown, PA. It features the body of a bee. The second honey bottle was embossed: "WARRANTEED, DIRECT, FROM THE BEES, WM.A. SELSER" and holds about four oz of honey. The third and fourth square bottles have the embossing "SELSERS HONEY BLOSSOM NECTAR" and "SELSERS BLOSSOM NECTAR" hold 16 ounces of honey. He advertised selling Bees and Queens in the 1880s at the Wyncote address, however by 1895, he was located at 10 Vine Street in Philadelphia where he ran a branch outlet for the Root Company.

In the May 15<sup>th</sup> issue of *Gleanings in Bee Culture* 1906, it mentions that he has devoted his time to analytical chemistry of honey and can tell the difference between honey that is sweet by substances fed by man and raw nectar from the plants.

**Walter S. Pouder** jars were listed in the 1895 A.I. Root catalog. These jars are also square in design and were available in three sizes, 5 oz., ½ pound, and 1 pound. However they were embossed: WARRANTED, PURE, HONEY, and the weight of the contents. On the bottom of the jars, you can find the embossing of W.S.Pouder or the Root Clover. Walter Pouder operated his business at 513-515 Massachusetts Avenue, Indianapolis, Indiana. It is interesting that the original Muth and Warranted jars had Corks that had an upper flange that covered the entire width of the jar lip. That would achieve two things. 1) Protect the top of the jar from being chipped. 2.) Give you something easier to grab when you were opening the jar.



**I.J. Stringham** was a bee supply dealer in New York and sold honey in a square bottle that had the Muth design. In the 1907 Stringham Catalog, he advertised that he had the mould for a square decorative honey bottle. His bottles have the embossed on the bottom Stringham in addition to the skep and bees on the front panel. He later became a Root dealer.

**Leslie Dunham & Company** had a 2¼" square bottle that was produced in 1889. It stood 6½" tall and carried the embossing only of "1 lb PURE HONEY, LESLIE DUNHAM & CO., BROOKLYN, N.Y."



**Pacific Honey Company** had a rectangular bottle that was 2½" x 3" and stands 8" tall. On the wide panel on one side there is the embossing: PACIFIC HONEY COMPANY. While on the rear wide panel is the embossing of the skep, the two trees, and bees. My bottle shows that the weight of the contents has been rubbed out on the mold and has turned amethyst in color. As far as I can ascertain the Pacific Honey Company was located in Portland, Oregon from 1907 to

1923 and had a jar similar to the Muth jar with different dimensions.

Old glass bottles sometimes turn different shades of purple due to the manganese dioxide being used as a decolorizer. When exposed to the rays of the sun or other ultra-violet sources, the photochemical phenomenon develops which is not fully understood. However there are unscrupulous glass dealers that can get glass to change color due to exposure to radiation.

After Charles Muth's death, his business was taken over by his son, Frederick. Frederick William Muth was born January 21, 1869 and died May 7, 1949. He married Freda Charlotta Muth, who was born October 17, 1869 and died August 9, 1949. Together, they had three children: Martha, born July 29, 1892 and died December 26, 1969; Edna, born November 21, 1894 and died November 26, 1969; and Clifford Frederick Muth, born June 9, 1897 and died July 18, 1952.

The business was located at 51 Walnut Street, Cincinnati, Ohio. In a 1907 advertisement, Fred mentioned that he sold a Muth Special Dove Tail beehive. The only thing that I can see that is different is that many of their supplies came from W.T. Falconer Manufacturing in Jamestown, N.Y.

In 1912, a fire destroyed the building that Fred was using for the business and so he found a suitable building down the street that he could rent. He eventually purchased that building at 204 Walnut Street.

A picture of Fred was taken of him driving his 1912 Model T Ford Delivery Car.

In the 1920s, Fred purchased a larger delivery truck which was a Clydesdale Motor Truck. The Clydesdale trucks were made from 1917 - 1939 and had a good service record with the military in Europe. They were made in Clyde, Ohio and



1904 Photograph of the Fred W. Muth family



1912 Model T Delivery Car  
The Fred W. Muth Company  
264 Walnut St., Cincinnati, Ohio

the one that Fred used had a “war transport body.”

Looking through a 1925 Muth Catalog, I noticed several things. The uncapping knives that were listed were Bingham knives, the honey extractor listed was a “Novice” or Root extractor, there was a Kelley smoker, the hive tool carried was the Root hive tool with clover insignia, the Muth “Ideal” veil was really a Root veil, and the only honey containers at that time were tin pails.



Fred W. Muth's Honey Truck, Cincinnati, Ohio  
Circa. 1920's  
Cydlesdale Motor Truck with War Transport Body



**Gold Medal Honey Label  
used by Fred W. Muth Co.  
after Muth Jar labels**

It is interesting that in the 1906 Illinois Glass catalog, the Muth jar is listed, as a honey jar. On special orders, a screw top lid was available. In the 1926 Illinois Glass catalog, the Muth jar was not listed, but in its place was a Diamond Fluted honey jar. This was really a surprise that the Muth jar and the things that Fred's father had invented and developed had been eliminated. However there were some changes. The Muth Bee

Brush was made from sea weeds that were light in color to prevent stinging and Clifford F. Muth was granted patent 1,849,331 March 15, 1932 for a machine for making sheet foundation.

Clifford Muth is mentioned in a couple of articles in 1947 and 1949 as being the vice president of the Fred Muth Honey Company. Cliff was a graduate of Walnut Hills High School and the College of Engineering in Cincinnati. He had been a bomber pilot in the military service.

Sometime between 1925 and 1952, the Muth Honey Company sold extracted honey in tapered jars. The brand that they used was Gold Medal Honey.

The last that time that the Fred Muth Honey Company was in operation was when Edward A. Fleckenstein was the vice president of the company in 1953.

**Honey Acres** was started by Christian Frederick Diehnelt, (1811-1882) who moved from Rosswein, Germany in 1852. The first apiary was in Milwaukee, Wisconsin and was called the “Linden Apiary.” The Diehnelts learned early that when you sell a product, you must continually add new items to your line to keep many customers coming back. One situation was the olive venture. They would buy olives, repack them and sell them. This project didn't last very long as they found out that the olives were costing more than what they could sell them. Christian taught his son August the art of beekeeping. Christian's grandson was Walter A. Diehnelt, who followed along in the business.

During the depression of 1920, they shut down for a couple of years and reopened in Menomonee Falls, Wisconsin. In 1930, the business was renamed Honey Acres. Walter J. Diehnelt, Christian's great grandson was at the helm and had several ideas such as a museum, a cookbook, and ideas for products to be sold such as the mints, July 27, 1948, he invented a slanted bottom board patent 2,446,081, and a Beehive



Opener for Walter Diehnelt's Olives when in Milwaukee



Honey Acres Honey Cremes in Hex Jars

Cover 2,498,880 on February 28, 1950. In 1962, Walter J. Diehnelt donated the land on Fond du Lac Avenue to the city of Menomonee Falls for a park. The original name for the park was Walter Diehnelt Rotary Memorial Park. Now it is called the Rotary Park.

In 1980, the company moved to larger facilities in Ashippun, Wisconsin. Walter's nephew Eugene Brueggeman recalled that in 1977 the Muth jars were added to their line and made great gift containers. Their Muth jars have an embossing on the bottom “Honey Acres.” The sales for the large jar, in 1977 was 100,000 bottles. In 1979, the smaller Muth jars alone sold 500,000 bottles in two months. The largest buyer of the Muth jars was Hickory Farms for their gift baskets. In 2004, Hickory Farms purchased between ½ million to ¾ million jars. However they changed their gift baskets causing Honey Acres to stop producing Muth jars. Possibly another reason that the Honey Acres stopped making the Muth jars was due to the four ounce mold developing a flaw and the word PURE was no longer spelled correctly.

Walter died July 4, 2011 at the age of 89, but Honey Acres is still in operation. They still have the museum and the items that are available are: Extracted Honey, Honey Cremes, Honey Mustards, Honey Straws, and Dark Chocolate mints.

**Blue Sky Bee Supply** sells the Muth Jars and the jars available are: 4 oz., 8 oz., and 16 oz. sizes. They redesigned the 4 ounce jar in 2012 as the artwork on the skep had become less skep like and rebuilt the mold. Instead of numbers for the weights on the jars, you will notice that the numbers are spelled out. Instead of the words “Honey Acres” you will see “retro pack” on the 4 oz. jar. Cardboard Gift boxes with graphics that hold two or three Muth Jars are

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also available. They have found that the jars make good wedding favors, gift baskets, as well as regular honey sales displays.

Blue Sky Bee Supply is located at 930 N. Freedom, Ravenna, OH 44266.

After studying the dates of the early American honey jars, it appears that Charles Muth did indeed develop the Muth honey jar. However it probably wasn't the very first jar to have been made for honey. I have in my collection of honey jars a couple of square jars that have a blob that could be interpreted to be a skep, which may have been the inspiration for the jar. After Charles developed the jar, it is clear that others continued the making of the jar. The original Muth jars had distinct skeps where you could imagine that you were seeing strands of straw. It remains today a very classy jar to sell honey.

It is difficult to take a picture of the jars to show the embossing. I tried making pencil rubs on the bottles but in some cases, the result was smeared or blacked out. The following gives you an idea of the printing on the bottles, but not as much detail as the pencil rubs. **BC**

*Jim Thompson is a long time beekeeper and beekeeping historian living in Smithville, Ohio.*

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# Filtering Honey

## Almost Every Filter Removes Some Pollen

Vaughn Bryant

---

Filtering honey has become a big issue among many individual beekeepers. Many beekeepers want to remove large items of debris such as insect parts and pieces of wax from the honey they produce so that their products appear clear in the jars of honey they sell. Most agree that clear honey is what will appeal most to customers. Occasionally, a customer might want clear honey with a piece of honeycomb included in the jar, but no customer usually will buy honey with insect parts and/or pieces of wax suspended in the jar of honey. This is why almost all beekeepers want to filter their honey.

According to the Federal Register of the United States Department of Agriculture on standards and grades of honey it states that beekeepers may remove, "fine particles, pollen grains, air bubbles, or other materials normally found in suspension." Therefore, from the standpoint of legal federal laws, one may filter honey and remove everything suspended in it, including pollen. Therefore, removing pollen from honey is legal, but by removing pollen along with other suspended items it can create a significant problem for testing and will also lower the nutritional value of the honey.

In a study I conducted in 2011, with Andrew Schneider of Food Safety News, we discovered that more than three-fourths of the 60 honey jars we purchased in grocery and drug stores from ten different states and the District of Columbia were incorrectly labeled. We tested all of them and found that in spite of labels saying "raw and unfiltered" many had no pollen in them; thus they were not "raw and unfiltered," as stated on the label because they were missing all the pollen. In addition, many of those jars of honey claimed they were "local wildflower honey, buckwheat honey, tupelo, sourwood, sage, orange blossom, clover, wildflower, or organic honey from various places in South America." However, our examination of each sample showed that, 76% of the samples we purchased and tested did not match what was claimed on the jar because they had no pollen we use to verify the nectar sources and origin of honey. Most of the samples that did contain pollen, and had labels that stated the honey type did not contain the nectar sources stated, or did not reflect the correct stated origin of the honey.

When many of the large honey packaging companies were asked about their honey, most either did not want to discuss the topic or said that most of the honey they purchase already had the pollen removed. We asked some of them why they labeled the honey as being some special type, they either said that the seller told them what it was when they bought the honey, so they put it on the label. One honey seller admitted that he didn't know what the honey was that he was selling but said he labeled it clover, wildflower, sage, or local honey because that is what the "customers like to buy!" By doing that, of course, neither

the packaging companies or the consumers are assured of where, or what is in the honey. Because of the role that pollen analyses play in identifying honey and in honey bee research, it is essential that pollen needs to remain in honey in order to verify the product's accuracy for place of origin and nectar sources as well as retaining the honey's full nutritional value.

For those individual beekeepers or honey producers who are sincerely concerned about the honey products they sell and want to ensure that their customers purchase honey based on what is "written on the label," filtering honey becomes a big issue. I frequently get emails or phone calls from beekeepers who send me honey to be examined and are then shocked to find that most or all of the pollen in their honey had been removed. These are beekeepers who have carefully filtered their honey using many different techniques and are amazed to discover that their techniques are failing to allow the pollen to remain in the filtered product. Many are using a variety of techniques and continue to ask "which filtering technique is best?" These are beekeepers and commercial honey producers who want to do the right thing but do not know how to filter the honey correctly in order to save the pollen contents.

I get asked all the time about "filtering" honey. People send me honey that has been filtered using all sorts of techniques and most of the time they are disappointed to find that they accidentally removed much or sometimes even all of the pollen from the honey they wanted analyzed. Other times, people accidentally rupture many of the pollen storage cells in a frame and then those pollen grains get added to the honey being extracted. That will also ruin an accurate analysis of honey based on the pollen content because when all of that extra pollen from storage cells is added, it will skew the results. Often we find that honey bees will collect nectar from certain floral sources, but they will collect pollen from other sources, which they visit only for the pollen, not for the nectar. I have examined some honey samples containing over 900,000 pollen grains per 10 grams of honey. That is far too high for most honey types. The normal and expected range of pollen in most U.S. honey types should range from less than 5,000 to just over 100,000 pollen grains per 10 grams of honey depending on the floral sources. There are only a very few honey types worldwide in which a "normal and expected" amount of pollen would range from 700,000 to over one million pollen grains per 10 grams of honey. One of those is Manuka honey from New Zealand, but there are a few others as well.

As far as filtering is concerned, I always suggest "NO FILTERING" is the best if you want to have honey samples analyzed and get an accurate understanding about the nectar types in the honey. I also recommend cutting out



a small area of the comb that is all honey and does not contain any of the nearby pollen storage cells. Then all you have to do is squeeze the honey comb into some type of container and even if some wax gets included that will not hurt our ability to conduct an analysis. Remember, all you need in terms of honey to do an accurate test of the nectar types in just “10 grams.” However, we recommend sending at least one ounce (about 35 grams) in case we drop a test tube or spill some the contents of our beakers when we are trying to process the honey. If those things happen, we need more honey to try the procedure again. If beekeepers will follow these instructions, then the results should be an **excellent reflection** of what nectar sources are “really” in their honey.

So, if some filtering techniques are so bad, then what is a good way to filter honey? Beekeepers send me samples and say they just used cheesecloth or various types of screens. We actually did conduct some preliminary testing of filtering techniques. We did not do an actual true and scientific test doing an analysis of the honey before and after screening. However, that takes a lot of time and frankly that is not what we needed to know. Instead, what we wanted to find out was if various layers of cheesecloth or an assortment of plastic and wire screens were trapping pollen. What we examined was what “got trapped” on top of the screens. We were only interested to learn if those trapped particles of debris, such as wax, and insect parts were also trapping pollen.

What we found amazed us. We found that several layers of cheesecloth will trap wax and other debris and some pollen grains will get stuck behind the debris and wax and in-between the layers of cheesecloth, which are usually discarded after filtering. We also found the same problem occurred and pollen loss did happen with a variety of screen types, many of which are sold commercially by bee equipment suppliers. More than one beekeeper has told me that they used the commercially available “200-micron filter,” which should not trap any pollen because no pollen grains are larger than about

120-150 microns and most pollen grains are much smaller than that. That statement is true, however, again we found that the problem occurs when the 200-micron filter becomes clogged with wax and debris and then is discarded with pollen trapped in the discarded debris. Another serious problem we found was that of the trapped pollen we found, most were large pollen grains, therefore, removing “many” of one type of pollen will give a false report of the original contents of the honey.

What about other filtering techniques using various types of filtering materials? My suggestion is that the best way to filter, and not lose pollen is to filter honey through regular window screen material; use the steel type, not the plastic type (see included photo). You can buy that screen at any hardware store. Window screen has openings of  $\frac{1}{4}$  of an inch. If you put the window screen over a bucket and then tie it down tightly with an old bicycle inner tube or with bungee cords, that makes an ideal strainer provided you watch carefully and make sure the screen surface is not getting too clogged with debris or wax. I also recommend that you heat the honey slightly before you do it or it will be too viscous to pass through the screen easily. Don’t over heat the honey but some warming will help when you screen it. I believe that the window screen drawn tightly over a bucket is one of the best ways to filter honey because it catches most wax, bug parts, and other debris. If the screen begins to clog, stop and rinse it with hot water and then return to screening. Another way beekeepers ask me about is filtering honey through a regular kitchen colander that you might use to wash lettuce, fruits, or berries. Most colanders have openings that are big enough not to trap pollen, but most are cup shaped and all the debris and wax tends to go to the bottom of the colander and then the debris can trap pollen.

The process we use to extract pollen for analysis from honey is not complicated and it can be done fairly easily provided one has the right kind of equipment and in some cases the right type of laboratory. Because of the role pollen analyses play in honey and honey bee research, it is essential that pollen recovery techniques produce accurate and repeatable results. Extracting pollen from honey is easy, but it is time-consuming and it does require skill to do it correctly. However, if the beekeeper did not collect the honey correctly from his/her hives and if it was not filtered correctly, then sending the honey sample off to have an analysis conducted to determine the nectar sources may not produce accurate results. As we mentioned earlier, probably the best method is to cut out a piece of the honey comb and squeeze the liquid into a jar and send it off for analysis. Don’t worry if some wax gets included. We can remove it during the extraction process. **BC**

---

*Vaughn Bryant is a professor at Texas A&M. His lab is a world leader in pollen analysis. He is a frequent contributor to these pages.*



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# Autumn Thoughts . . .

## Fences, honey and queens.

### *Electric Fence Considerations*

According to the Vermont Fish and Wildlife Department, the black bear population in the state has about doubled in the last 10 years. This has resulted in a lot more interactions between bears, bees and beekeepers and has caused me to become intimately acquainted with the electric fence.

I have learned a few things about electric fences, some of them, the hard way. The most important thing to think about when it comes to an electric fence is the rating of the fence charger in joules. Joules are a measurement of power increments as applied to an electric fence. It is the amount of the pop, snap, shock, kick, or pain the output pulse causes to those that touch the fence when it is energized.

When it comes to discouraging bears with an electric fence, it is important to use a charger with a power rating of at *least* 0.8 joules. The more the better, but the more powerful the charger, the more expensive it will be.

The next most important thing to consider when installing an electric fence is how well it is grounded. All electric fences should have one six to eight foot grounding rod per joule of power. Thus, a 1.5 joule fence needs two grounding rods. The ground rods either need to be connecting together with a single wire, or set up with wires running from the ground on the fence charger, to each rod. The rods must be separated by at *least* 10 feet or else they will simply act as a single grounding rod.

I have also discovered that it is highly advisable to avoid copper grounding rods. Copper oxidizes and builds up corrosion over time (the green coloration that exposed copper picks up). Since this corrosion can interfere with the ground connection, I now stick to galvanized grounding rods – and make sure that only six to 12 inches of rod is sticking above ground when I'm done installing it. This means that I use a ladder and sledge hammer to pound it into the ground. In areas of rocky ledge, or extremely rocky soil, I find that sometimes it is necessary to install the rod in the ground at a sharp angle in order to reach maximum depth without hitting boulders or bedrock.

Many authorities encourage the “training” of bears by hanging a strip of bacon, a tuna fish can with a little tuna still in it, or a piece of tin foil smeared with peanut butter from the fence. The bait attracts the bear who touches it with their wet tongue, or nose, and the jolt the bear receives is so shocking it teaches the bear to keep its distance. I live in an area where black bears are plentiful and common and I have never used any bait to try and train the bears in my area. It does not appear to be necessary – as long as the fence I am using is at least 0.8 joules and properly grounded. I have never had to fend off brown, grizzly, kodiak, or polar bears from my apiaries so if you are dealing with these bruins my experience may not apply.

### *A Good Use for Uncapped Honey?*

In order to ensure that my extracted honey has a low enough moisture content (generally below about 18 percent), so that it will not ferment in the jar, I like to make sure that at least 75 percent of the honey cells in the comb are capped. That means that for every three frames of capped honey that I extract, I can extract one frame of uncapped honey without compromising the quality of my harvest. Some years however, the bees have trouble filling and capping those cells and I end up with many frames of uncapped honey. In the past, I have tended to put aside these uncapped frames and then extract them all at



*This electric fence was installed around an apiary located on a rocky ledge which prevented the grounding rods from being buried in the ground to the appropriate depth. Note that the rods are too close together and one of them is made of copper and is likely to fail as the metal corrodes over time.”*



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once so I can bottle them separately. I then sell this high moisture, “mead” honey, at a discount.

This year I have more nucleus colonies than normal that will need feeding due to the large number I had to make up this season in order to replace my unusually high winter losses. Regular readers will know that I prefer to feed my bees honey since it not only helps improve overwintering but results in stronger colonies in Spring.

In order to stretch out my honey supers, this year I am going to use those supers of uncapped honey for feeding – place them on hives that need a super of food and then feed fortified sugar syrup (*Bee Culture* May 2009) until they fill out the rest of the super and cap off the frames so the supers are nice and full.

Experience has proven that bees tend to overwinter better on honey than they do on sugar syrup. With this in mind I wonder if there will be enough natural honey in the uncapped frames to make up for the negative impact the sugar syrup used to fill out the frames will have on the health of the bees, even if it is fortified. I'll let you know in spring.

#### *Fast Easy Queen Introduction*

A couple years ago while introducing 10 queens to splits made from my survivor colonies, I was having difficulty with four of the queens. They had not been released from their cages after 4 days in the hive so I tried releasing them manually. Unfortunately, observation of the queens upon release indicated hostile behavior toward the queens by some of the workers in the hives. Now normally I would have returned the queens to their cages and left them in the hives for another few days before trying to release them again in the hopes that the workers would eventually become accustomed to the queen and accept her. However, I was in a hurry and had heard that spraying a light mist of the drench concentration of lemongrass and spearmint feed stimulant could help with getting bees to accept a queen. Since I had some Honey-B-Healthy on hand I mixed up my drench spray (four teaspoons per quart of sugar syrup instead of one teaspoon per quart which is four times the normal feeding concentration) and sprayed a light mist over each comb of bees, brood, honey and pollen. I then released all four queens directly into their hives. A week later, all four



*Essential oils can help make the process of introducing a queen into a colony much easier and more likely to succeed.*

were laying well and had been accepted by the workers.

I didn't think much more about this experience until last year when I happened upon a small swarm that issued out from one of my hives in early October. Here in the Northeast an October swarm is as good as dead since almost every blooming plant that could be used for forage has completed its flowering cycle by then and the only significant food source that is typically available at that time of year is obtained from robbing out other hives. I gathered the swarming queen and some attendant bees in a paper bag (the only small empty container I could find quickly at that moment) and decided to introduce the queen into a colony in another bee yard that I had discovered was queen-less the day before. I sprayed a light mist of H-B-H drench over each of the frames of bees in the top two boxes of the queen-less hive (there were three boxes that made up the hive in total) and dumped the queen in. She was laying well a couple weeks later.

These experiences were encouraging and got me thinking that maybe this is a fast and easy method for introducing new queens into hives. Most notably, it eliminates the need for additional visits to the hive to check on the status of the queen in the cage, etc. However, I wanted to give the process another test before I really felt comfortable recommending it to others.

This year I obtained five queens in June to release directly from their cages into 24-hour old, three-to-four frame splits from some of my surviving colonies. After lightly spraying each comb in each split using the drench spray I opened the cage entrance and held the opening next to the top bars. I waited patiently until the queen found her way out of the cage on her own and scooted down between the top bars onto the lemongrass/spearmint scented combs below. I am pleased to report that all five queens were accepted without any issues.

It appears that the strong smell of the lemongrass and spearmint oils in the drench spray initially masks the smell of a newly introduced queen eliminating the initial hostility that the bees in the hive have toward a strange queen. Over time the scent of the essential oils wears off, but by then the queen has spread her scent around the hive, and may have even started laying eggs, so that her pheromones progressively overtake the scent of the essential oils. The worker bee's awareness of the new queen's scent is so gradual that it apparently allows for the seamless transition to their acceptance of the new queen in their midst.

I love being able to introduce queens this way since it eliminates the need to wait several days, to a week, for the bees to become acclimated to the new queen and saves a return trip to the apiary to check on the status of the queen in the cage. This method may prove especially important for the beginner beekeeper since I suspect that it will work just as well when introducing a queen to packaged bees as it does to a queen-less hive. If anyone uses the essential oil drench spray to install a package, please let me know how it goes.

While this queen introduction method has worked for me 10 times out of 10, just as with traditional queen introduction methods, I doubt it is foolproof. I am sure there are some circumstances, or conditions, under which the process of immediate queen introduction with essential oils will not work. Thankfully, I have not discovered them yet. I'll keep you posted. **BC**

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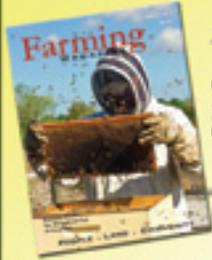
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# BIGGER PICTURE

Jessica Louque

## Turkey Wars

Sometimes, I get a few complaints from readers that my article has nothing to do with bees, or is vaguely related to bees. This is going to be one of those articles, so if you don't ever plan to have turkeys, skip this page! Otherwise, here's some words of wisdom to those of you who are in the process of homesteading and thought you might want to get turkeys one day.

I ordered turkeys last year from McMurray Hatchery. Usually I go overboard researching things before I do them, but I didn't realize what I needed to even look for when the turkey craze started. I thought a mixed order from the hatchery would be my best bet and go from there, and I'd be good to go. When they came in with an order of chickens and guineas, I was super excited but maybe also vaguely concerned about how dumb I was to order so many birds at one time (I'm not telling you how many, but let's just say there's a minimum order for shipping and I definitely exceeded it). The turkeys were little weirdos right from the start, but I loved their little knobby buttons on their heads and their inquisitive nature.

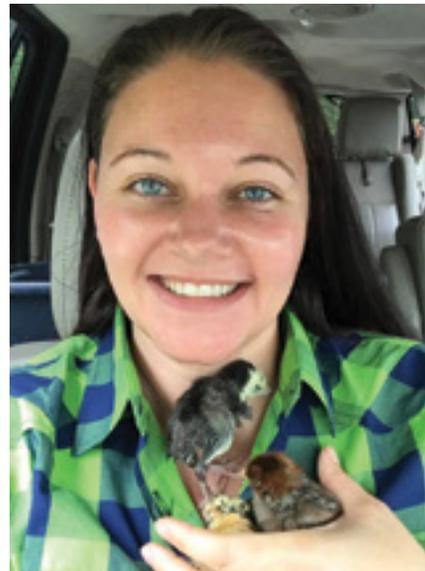
When you get baby birds, they are always so cuddly and precious and snuggly, mostly because you're warm and they're not so they love you because they have no choice. Give that a day or two and guinea keets will scream their head off to keep you away from them and trample each other to death to get away. Chicks might not run away, but they don't really run to you either. Peafowl are outright stuck up about people unless you raise them by themselves and they have to bond to you. Turkeys, however, seem to really bond with people.

It's probably not even possible to explain how much I now love turkeys. I'd say it's a good possibility that I won't ever be able to eat a turkey on our farm, so they are essentially

useless as a meat source. Once I know what they're good for out here, I'll be sure to let you know. They are just the sweetest things, and once you spend some time with them, they will follow you all over your yard and bark at you and cheep at you and make these adorable little noises when they're happy, kind of like a cat purr but in a bird form. None of the other birds make noises like the turkeys.

When they were little but just made it outside, I would take them kale and feed them from the chicken tractor door, which taught them to run to the door when they saw me coming. Sometimes, I would go all-out and boil them eggs, put chia seeds on it, get some blueberries, and add some kale for a super treat. In fact, that's the breakfast I made on Father's Day – for the turkeys. Not Bobby. He's a good sport, though.

If I sit on the swing outside, they will hop up and swing with me. One learned to swing on my foot so it's like it had a mini-swing of its very own. They also only want to eat and drink if I sit with them to do it, which is really cute but kind of sad. Now,



*Bring baby turkeys home with the sick emo turkey at the top.*

they sit at the back door and stare in at the cats waiting for me to come outside when I get home from work. They're on a cat watering fountain because sometimes they're too stupid to drink "flat" water and have to hear it running to know that it is water. The cats have to drink out of the dog bowl, and I'm fairly sure they resent losing attention to outside birds more than normal.

The most unfortunate thing with turkeys, now that I've told you the fun parts, is that they die. The war with turkeys to keep them alive is ridiculous. I don't mean like, one or two or five die after you receive them like occasionally happens with poultry shipments, but they seem totally healthy and then the next day they are dead. Here are some of the things that have happened to me, why I think it went wrong, and what might be done to rectify the situation.

1) Ordering with chicks – I wanted to raise them with chicks because I had read that turkeys have a hard time learning to eat and drink without a chick to teach them how. It seems that they are a little worse off than normal poultry babies without their mother to teach them, and can die by overeating or drowning easily. They immediately went into our brooder with the chicks that came in, and I learned later this is a big no-no because chickens carry a worm that is spread to turkeys and causes a disease called Blackhead. It doesn't really affect chickens, but it can kill turkeys and peafowl. For the first four weeks or so, they were in the brooder (it's maybe a 50-75 gallon water trough on the back porch) and I think I only lost one and it really wasn't in great shape when it arrived. I had no idea what kind of turkey it was since I had ordered a random assortment, but we called them the emo chicks because they looked like they had a black teardrop under their eyes. Once they were

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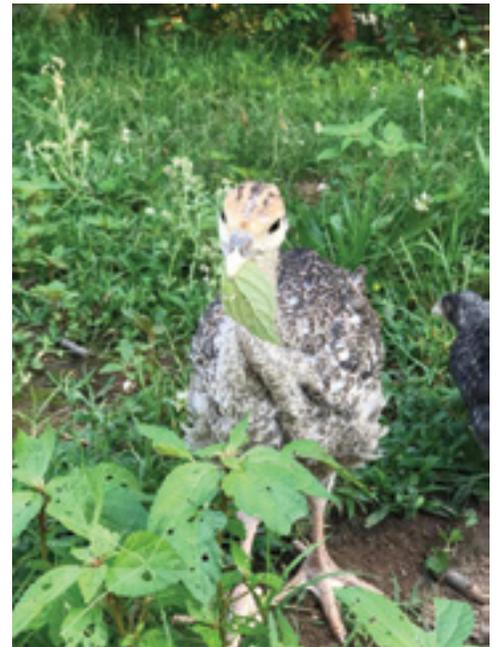
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older I think they were called Royal Palms, but I'm not sure because none survived to eight weeks. Once we put them out into the chicken tractor, the turkeys just started dying. One day, I lost four in an hour. Overall, I don't think the Blackhead disease is what killed them, but I think I had too much competition within the area. I did notice that some of the turkeys were prone to laying on the ground, and they looked almost like they were stepped on and damaged. It is considered an absolute no-no in commercial circles to mix chickens and turkeys, but there's no way there's an inch of space here that hasn't been walked over or pooped on by a chicken or a guinea or a quail. This seems to be up for debate as some people seem to successfully raise their chickens and turkeys together, but the major downside here is that the only medication that seems to cure Blackhead is now banned. Some people have luck with cayenne pepper, but there is no real, accepted cure for the disease.

2) Not understanding their shortcomings – they will literally starve to death or overeat, drink themselves to death or drown or thirst to death. Turkeys need a lot of babying when they are young. A LOT more than you would expect with normal poultry. They just don't do as well without their mother to teach them, so they become these anarchist rebels that try everything without understanding anything. They will die of thirst next to a waterer because (I learned this too late) that

they don't understand how to drink water well and they don't like stale water, so if you don't replace the waterer every day, they won't drink it. They don't always understand that the same waterer is their water source if you move it from where they expect it to be, and they don't do well finding new waterers. I had to switch to the "pet fountain" which entails dragging an extension cord around the house and out to the turkeys, but they love running water so much better. They also have a difficult time eating because they will peck at most anything that is definitely not food. You have buttons on your clothes? Peck. You have shoelaces, a watch, a ring, nail polish? Peck. You have camo pants that look like plants in the pattern? Peck. You have a handful of food, a hanging feeder, a trough feeder – no peck. Maybe on the feeder itself, but not into the food. It took a couple tries, but they LOVE egg whites. I am not sure why, but they don't like egg yolk. After sitting with my babies and losing all but two of them, I think they died mostly from stupidity or being stepped over.

3) Not researching breeds – I should have ordered a heritage assortment. Somewhere in not paying attention, I ended up with these super sweet big blue eyed babies that can barely walk because they are so bow-legged and get so big they can't really stay mobile. My white giant and broad breasted bronze (the two that survived) both will get so large that they cannot physically reproduce, will not be able to fly, and will have



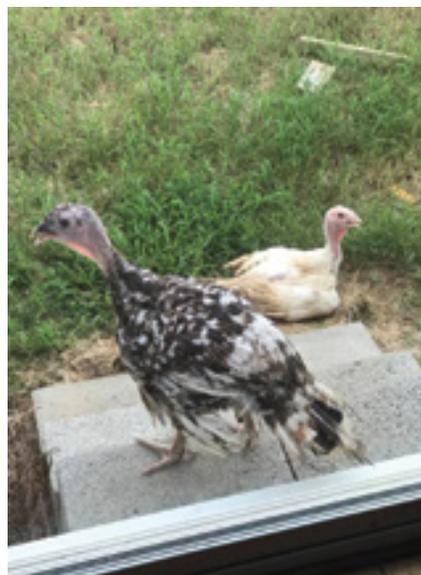
*A broad breasted bronze baby eating a leaf.*

difficulty walking. I might end up pity-eating them but for once, I'm not sure I could eat my turkeys. In my next run, I will be ordering heritage turkeys only, and will just get turkeys so I can focus on them. We will see how that goes, as I am trying to talk Bobby into letting me get another batch of turkeys for my birthday in August this year. They are pretty expensive for the spectacular failure I've had so far, especially with the heritage babies. Hopefully my mistakes can be rectified the next time around.

If I can talk Bobby into another batch of turkeys, there will definitely be some things done differently. I will most likely start them with cayenne pepper in their food to help prevent a few things, and keep broiler booster in their water for at least the first month. I'm not sure how that works with a pet fountain filter, but I can take that out if it doesn't go well – the moving water is more important. Most important of all is that you know, if they get cold in the Winter and I can't get them little turkey sweaters, I guess they'll have to be house birds and roost in the living room. Bobby can make them a turkey couch perch for Christmas. I won't tell him about that until after he agrees to the next shipment though. **BC**



*A baby turkey sitting on the edge of the swing set.*



*Soon to be "house turkeys."*

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# Enough Good Food!

Ann Harman

Well, this year's honey crop was a bust. Rain, rain and more rain during the blooming time of this area's major honey plants. The bees had so little flight time that a few colonies actually had to be fed. Those beekeepers who did not realize bees could weaken or starve during Spring and Summer months may well learn the hard way. Weak or dead colonies. Just not enough food to go around.

Honey is indeed a variable agricultural crop, just like corn or wheat. It is so important to realize the association of weather, plants and bees. In addition it is just as important to realize that the bees' needs come first. After all, honey and pollen are their only nourishment. If we have chosen to be a beekeeper we must look after their needs.

Our calendars are now showing us that it is September. Although days might be lovely and warm, Winter is on its way. The bees know that. When it arrives and how ferocious it is depends on your climate. To be fair to Mother Nature, local weather conditions can modify seasonal weather.

With no surplus honey this year there are simply no frames stuck away in the freezer for emergency feed during the Winter. Therefore during the next few months careful attention will have to be paid to what the bees will be storing, how much and where

they are putting it.

Autumn is the time of year that bees will be arranging their nest for the coming Winter. One of their mottoes is 'Food above Brood.' So as the days go from equal day/night length to shorter day hours the bees will begin storing their Winter honey from the top of their nest, moving queen and bees slowly downward.

We tend to think about stored honey as being so important for Winter survival but we need to consider pollen also. Pollen is necessary when brood rearing begins. Do you know your Autumn bee plants? If you have some pollen-producing ones your bees may collect enough to give them not only a supply to raise Winter bees at this time but also enough to give a good start to brood-rearing as the days lengthen after the Winter Solstice. Some colonies, even in a mediocre pollen-producing year, manage to stuff entirely too many frames full of pollen. So often we pay attention to the honey stores that we may overlook what the bees are doing with pollen. If you know your colonies are free of American foulbrood you can equalize pollen stores by moving frames from an overfull colony to one that seems to be low on pollen stores.

The enthusiastic collectors frequently become pollen-bound in the Spring. Bees do prefer fresh pollen so if the Spring pollen sources are rich ones, the Autumn-collected pollen may well be ignored during brood expansion. Those frames with 'stale pollen' (according to the bees' palate) may well limit brood expansion. Keep that in mind next Spring.

Feeding pollen or other nutrients in patties or as a dry feed has become increasingly popular with many beekeepers. Usually the formulation is a patty that can be placed directly on the frames but there is a large plastic feeder used for a dry pollen substitute. Formulation of the patties varies so you will have to find out which one(s) you prefer – actually

which the bees prefer. Some colonies seem to treat some of the patties as rubbish and diligently remove them from the hive. Check at the entrance for such debris.

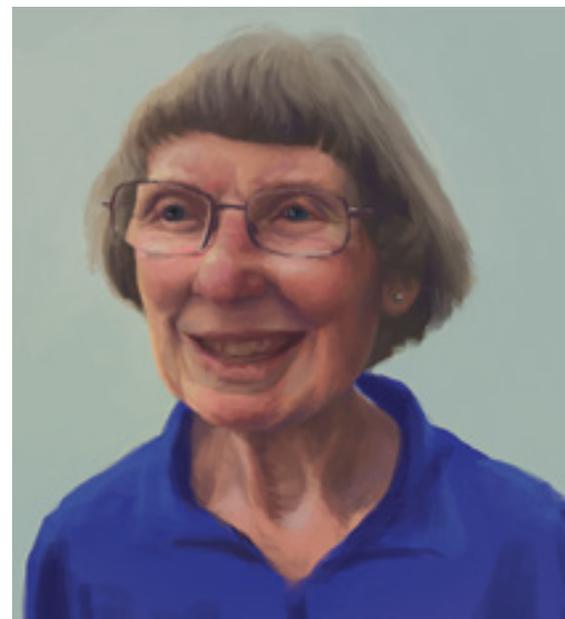
If you live in small hive beetle country you may find that they love certain patties both for food and for a place to shelter and perhaps to raise more shb. So some experimentation with patties may be necessary. Check the underside of patties placed on the tops of frames to make sure the patties are not a haven for shb.

The other necessary food for Winter is honey. Some areas of the U.S. have an excellent honey flow in Autumn. Two plants are quite common throughout much of the country – goldenrod and aster. In certain places goldenrod, and to some extent aster, is removed as surplus. Both of these honeys do crystallize readily but are appreciated as a marketable crop in their area. However other beekeepers will simply leave both honeys on for Winter food.

Although some beekeepers feel that the bees may not use crystallized honey, enough metabolic water is usually available within the hive to make goldenrod and aster honeys perfectly useful. After all, some



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*If you have to feed protein, which is best, and more importantly, which will your bees actually eat? And, watch for small hive beetle larvae that love to share these too.*

beekeepers use dry sugar or blocks of fondant as emergency food. Metabolic moisture makes those useful. If the colony is small it is possible that not enough moisture would be available. Bees do not always clean out their 'pantry' very well when Spring nectar arrives. Therefore, in Spring, you may well find old honey on some frames. At least the colony went into the Winter with plenty.

How much stored honey should a colony have? The amount, of course, depends on your climate. Those colonies living in the Deep South where 'Winter' means chilly days and cooler nights may need only about 35 pounds of honey. In the large temperate area of the U.S. a sensible amount is considered to be 60 pounds. In the cold northern states 90 pounds would be necessary.

So what do those numbers really look like? Well, a 10-frame medium honey super with all 10 frames full and capped will be a little more than the 35 pounds needed in the Gulf states. So that makes two medium 10-frame honey supers to be more than adequate for the large temperate area. One 10-frame deep box weighs about 90 to 100 pounds. Yes, these are rough figures but they can help you decide if your bees have sufficient. If you are keeping bees in eight-frame equipment or other different sizes, you do the arithmetic.

Now if you have a hive on a scale – and are keeping records – you should know how much the bees are storing during the days and weeks until Winter puts an end to the nectar plants in your area. You do know where those plants are, don't you?

Even if you have your hive on a scale, at some point you must look inside the hive. Bees will store honey not only in the top brood chamber but also in frames along the sides of lower brood chambers. Honey does act as

insulation, so the bees have figured that out. You need to look inside to make certain the colony is healthy and that the queen is present. Very early September is your last chance to unite a wimpy colony with a strong colony and eliminate the wimpy queen. The vigorous queen needs plenty of time to boost the population of Winter bees.

In many parts of the country Autumn weather is dry giving the bees good flight weather to collect nectar for the Winter stores. But what if Mother Nature decides on endless cool rainy days during the Autumn bloom time? Very little to no Winter stores of honey are being made. If you have a scale hive it may tell you that the bees are actually eating instead of collecting. If you wait too long the weather may cool down. The bees may spend more time in their cluster instead of foraging. Your goal for Winter stores will not be reached.

FEED! Feed syrup now. This syrup will be the two parts sugar to one part water, thick syrup for storage. You will find that slightly less than the full two parts sugar prevents crystals forming especially in cool temperatures.

Syrup feeders now come in as many styles as fancy shoes. Take a look through a number of different bee equipment supply catalogs. Ask beekeepers in your local club which style syrup feeder they prefer. Yes, you might get more confusing information than you want, but their comments do give you something to think about.

One important point to think about when choosing a feeder is how it will fit with your inspection of your hives. The large feeders, such as the hive top feeders that hold one or two gallons of syrup, can be heavy and awkward if full of syrup on a hive that needs inspection. You may choose to

have two different styles of feeders for different situations.

No matter what style or size of feeder you choose you must keep it clean. The 1:1 sugar syrup will ferment. Any debris left in a sticky feeder may grow mold. Unwashed sticky feeders left lying around will undoubtedly attract ants and other critters. So listen to your club members and review your own methods of beekeeping before purchasing a feeder. Buy one and try it out. You might change your mind. At least a club member might buy it from you.

The big selection of hive feeders, pollen substitutes and patties has been accompanied by a large selection of nutrients to feed your bees. The various bee supply catalogs have a selection. What to feed? When to feed? How much to feed? Read the descriptions and feeding recommendations carefully, then make your decision. Oh yes – you can ask your club members. Some of these supplements are fairly new on the market so you may only get a few answers. If you do decide to use a supplement, keep some records. These can guide you in the future.

So how are your bees doing with their Winter preparations? Get out to the beeyard and look! First, stop a minute and consider the weather, not only in the past month but what are the predictions for the next few weeks. How are the Autumn flowers doing? Get out there – in a car, on a bicycle, on two feet, on a horse – and look. Now go out into the beeyard. Watch returning bees at the hive entrance – do you see any pollen coming in?

At some point, depending on your climate, you will be opening hives and taking a good look inside. Bee population – plenty of bees or a wimpy colony? Pollen stores – plenty or not much? Cells full of honey or is syrup necessary? You can run a *Varroa* test to see if the count exceeds the three mites per 100 bees. If it does, decide on treatment.

Will these colonies be alive and ready to work in the Spring? There is no guarantee that they will but during September you know you have done your best for Winter preparation. **BC**

---

*Ann Harman harvests honey – when she has some – and pays attention to the plants around her home in Flint Hill, VA.*

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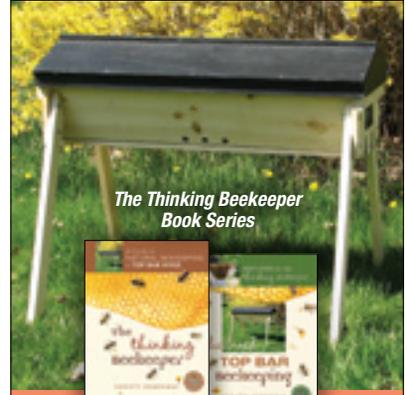
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# GLEANNINGS

SEPTEMBER 2017 • ALL THE NEWS THAT FITS

## AUSSIE MANUKA HONEY TIED UP IN RED TAPE

Beekeepers in the Australian state of Queensland say government red tape is blocking the development of a potential billion-dollar Manuka honey industry.

Queensland Beekeepers Association president Robert Dewar says the problem is that in 2004 the state government converted state forests into national parks.

Despite the fact apiary sites had stood in public forests for more than 100 years, national parks ban non-native animals, including bees used for honey production. Under the change of status, beekeepers will lose access to national parks by 2024.

Recent research found Australia is home to more active native *Leptospermum* plants than New Zealand and could potentially hold stronger antibacterial properties than its famous variety across the Tasman Sea.

Dewar tells the Australian Broadcasting Corp. that apiarists are already paying hundreds of dollars in permits to use state-owned land where these shrubs are found, but not all of it is usable terrain.

Any clearing of the land is illegal under the Vegetation Management Act 1999.

Dewar says this is restricting beekeepers from setting up hives.

“We don’t want to knock the trees down – that’s what we depend on,” he says. “All we’re really looking for is a reasonably low-growth area that we can mow around, just to reduce the fire hazard is the main thing.”

The beekeeping industry is mobile in nature, Dewar says, and most sites do not require more than 600 square meters (6,458 sq. ft.) of land.

The state Department of Natural Resources and Mines tells the ABC it is aware of the concerns of beekeepers and is working on an area management plan to allow apiarists to undertake small-scale clearing for hives.

Commercial beekeeper Daniel Jones tells the ABC manuka honey is a potential billion-dollar industry for Australia.

“Normal honey for us is worth ... anywhere between \$5 and \$6 a kg,” he says. “If we sell privately we can get a little bit more, but the medical honey is worth up to \$30, \$40 a kg.”

Dewar says he knows from talking to the beekeepers in New Zealand that they are “pretty well” at the limit of manuka honey production.

“Yet we’ve got it here growing in the wild, we’ve just got to get to it,” he says.

*Alan Harman*

## GETTING THE BUGS OUT OF CONCRETE HIVES

A South African student believes his innovative low-cost concrete hive design offers a more durable, low-cost and protective structure that will encourage more people into beekeeping.

Ivan Brown, a design student at the University of Johannesburg’s Faculty of Arts, Design and Architecture, says the lightweight concrete beehive is at the heart of his Beegin project and was developed with input from beekeepers and urban farmers.

The molds that are used to create the beehives can be sold or sponsored so people can produce beehives locally for themselves and their communities, Brown says.

He exhibited his beehive model at the Design Indaba Festival in Cape Town.

The festival’s emerging creatives program provides a year of support, mentorship and guidance to young designers who have little industry exposure. The program helps them learn how to manage and grow small businesses and provides opportunities to show their work.

Brown says the concrete beehive helps create a more sustainable beekeeping industry by aiding the survival of bees; offering a more sustainable option for beekeepers and additional income sources for small-scale farmers.

Brown’s “Beegin” project is a dual research and product design project intended to aid in the survival of bees and by extension, tackle the problem of decreasing pollination.

Under the supervision of Dr. Naude Malan of the university’s Development Studies Department and Angus Donald Campbell, head of industrial design, Brown aims to develop beekeeping technology that is accessible, affordable and sustainable for small-scale farming communities, to stimulate socioeconomic development.

“Although I have always been fascinated by bees and apiculture,

the project emerged from thorough research,” he says. “I interviewed urban farmers who told me they were interested in beekeeping but could not afford the equipment.

“I interviewed beekeepers who explained how the industry is in decline due to theft, vandalism, diseases, pests, fires, floods and pesticides. I began working with the farmers and beekeepers to develop a solution, and at the moment I have five urban farmers and five beekeepers testing out the system, with some great initial results.”

Brown says the aim of the project is to develop an appropriate – sustainable and accessible – system for beekeeping.

“In south Africa, our biggest problem is theft and vandalism – honey badgers and people stealing honey and hives,” Brown says in a television interview. “That is really affecting beekeepers and they are losing up to 30 % of their equipment every month.

“I am using concrete as a way to make the manufacturer of beehives more accessible, where instead of using carpentry tools and a workshop, you would be able to have a mold and just have cement and aggregate to produce as many of the beehives as you want with no electricity in a low-tech manner.

“The concrete will protect the bees from certain pests that in the wooden hive are able to bore into the wood and lay eggs. We do not have that problem with the concrete.

“I am trying to find a solution that will maintain a more sustainable beekeeping industry and also help urban farmers and other farmers to protect their pollinators.”

If successful, he says, his system will contribute towards food security in two ways – indirectly, by bringing additional income to marginalized, small-scale farming communities and directly by helping to protect the pollination source of 70% of food crops.

*Alan Harman*



*Inventor says concrete hive offers a more sustainable option for beekeepers and additional income sources for small-scale farmers. (University of Johannesburg photo)*

# This Year Get Your Bees Past **THE HARDEST SEASON**

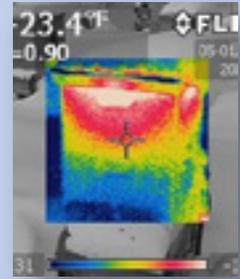
## October To April

Saturday, Oct. 14, 2017, 9:00 AM – 4:00 PM

Bee Culture Conference Room

623 West Liberty Street, Medina, OH 44256

Sponsored by Bee Culture Magazine



- Session 1 – Fall mite, disease management – Tracy Alarcon
  - Session 2 – Winter Nutrition, evaluation, fall feeding – Kim Flottum
  - Session 3 – Winter Protection – Roy Hendrickson
- Lunch

Session 4 – Emergency Winter, and Spring Feeding – Roy Hendrickson

Session 5 – Swarm Management and Mite Control – Tracy Alarcon

Session 6 – Spring flow, supering and making splits – Kim Flottum

**Registration \$50 includes lunch**

**Send checks to Hardest Season, 623 W. Liberty St, Medina OH 44256**

**Online – go to <http://store.beeulture.com/events/>**

**Call 800.289.7668 ext 3255 or 3214**

**Walk-ins welcome, but lunch not guaranteed**

### Tracy Alarcon

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- Portage Cty Inspector 6 years
- OSBA Certified MB Manual BMP author
- NL Editor; Medina, Portage Board member



### Kim Flottum

- Bee Culture and BEEkeeping Editor
- Author 4 beekeeping books
- 40 years in the business



### Roy Hendrickson

- Keeping bees 43 years
- Retired 300 colony Commercial Beekeeper, + pollination, honey, nuc sales
- Writes for Both Bee Journals and OSBA NL
- Runs 30 colonies



# ABOUT BEESWAX

## Swammerdam's Apprentice

### Beeswax. What Is It?

The main constituents and the physical properties of beeswax. Wax is a hydrocarbon – contains the elements carbon, hydrogen and oxygen. It contains about 300 different chemicals.

Major components of a typical beeswax:

- Monohydric alcohols 31%
- Fatty acids 31%
- Hydrocarbons 16%
- Hydroxyl acids 13%
- Diols 3%
- Other (propolis, pollen, ...) 6%

Physical properties of beeswax

- Solid at room temperature
- Melts at 64°C
- Solidifies at 63°C
- It has a nice aroma (acids, alcohols, esters – volatiles)
- Specific gravity = 0.95. It floats in water and sinks in alcohol.
- It is not soluble in water.
- It is water repellent, used as water proofers – wax jackets and waxed threads.
- Slightly soluble in alcohol. Quite soluble in the higher order alcohols.
- It is soluble in chloroform, benzene, toluene, petrol, . . .
- It is brittle when cold.
- Malleable and plastic at 32°C
- It can remain stable for thousands of years.
- It is combustible, giving CO<sub>2</sub> and H<sub>2</sub>O plus heat and light.

### How Do I Make A Show Sample?

Purification.

- The wet cappings can be put in muslin bags (balanced) and spun in the extractor to recover as much honey as possible.
- I wash them in a little soft water to remove most of the honey and this can be used to feed some colonies

– no waste.

- Rinse the cappings a few times in soft water. Hard water causes saponification with the calcium in the hard water – gives a bloom to the wax.
- For show the best wax comes from fresh cappings.
- Spread the cappings out on a white cloth and pick out any discoloured bits or foreign bodies – bee parts, propolis etc.
- The wax must be filtered through fine muslin. Place cappings in fine muslin cloth and tie it off.
- Place this in a jacketed hot water heater – when all of the wax is melted lift out the muslin slowly – reasonably pure wax will be left



floating in the water.

- Filter this hot wax through fine filter paper to remove any further impurities, some use fine filter paper.
- Other methods can be used – solar extractor – steam boiler – or steam jacketed wax press.
- Do not use iron or copper vessels – stainless steel is preferred.

### Mold

- Buy a mold of oven proof glass (Pyrex), free of internal blemishes and reserve for wax molding only.

- Check size of wax block from the show schedule.
- Put the appropriate volume of soft water in the mold and mark this level on the outside.
- Wash, with unscented detergent, and dry the mould.
- Heat the purified wax up to 70°C.
- Rub two to three drops soft water with two to three drops of unscented detergent all over the inside of the mold – to act as release agent.
- Place the mold in another larger Pyrex container with water at 66°C.
- Momentarily stand the heated wax container in a shallow tray of iced water – to congeal any dirt that may be in the bottom.

• Pour the molten wax into the mold, avoiding any air bubbles, up to the mark.

• Place a preheated lid on the mold.

• Allow to cool slowly, insulate with newspapers.

• Put the lot into the oven or the range when going to bed.

• The following morning submerge the mold in container of cold water – this releases the wax block.

• Smoothen off the edges and polish the surface with a silk cloth.

• The process will have to be repeated over several nights to get a block good enough for show exhibition.

• When you do get a good one – wrap it up well – put it in a plastic container and mind it.

*reprinted with permission from AN BEACHAIRE, the Irish Beekeeper*

# CALENDAR

## ◆INTERNATIONAL◆

**Caribbean Bee College** – November 1-4 at the University of West Indies, Cave Hill Campus, Westend, Barbados. Two days of training and then a testing day.

For details visit <https://www.eventbrite.com/e/2017-caribbean-bee-college-tickets-34694369794>.

**Beekeeping Tour to Cuba** November 11-19 featuring visits to apiaries, processing plants, research centers and more.

Contact Transeair Travel if you are interested in more details, 202.362.6100 or [Blubic@TranseairTravel.com](mailto:Blubic@TranseairTravel.com).

**45th Apimondia International Congress** will be held September 29 to October 4 in Istanbul, Turkey.

For more information visit [www.apimondia2017.org](http://www.apimondia2017.org).

## ◆CALIFORNIA◆

**CA State Beekeepers Association** will hold their annual convention November 14-16 at Harrah's Lake Tahoe.

Featured speakers include Karen Ross, Secretary of Agriculture and Susan Talamantes Eggman, assembly member.

To register [californiastatebeekeepers.com/events](http://californiastatebeekeepers.com/events).

**Western Apicultural Society (WAS)** will held at the University of Davis September 5-8.

Norm Gary will be participating. Other speakers include Eric Mussen, Brian Johnson, Elina Niño, Serge Labesque.

Watch the web page for updates, details and registration, [www.westernapiculturalsociety.org](http://www.westernapiculturalsociety.org).

## ◆CONNECTICUT◆

**Back Yard Beekeepers Association** 2017 speaker schedule – September 26, Tom Seeley; October 31, Kirk Webster; November 14, Jennifer Berry.

For information visit [www.backyardbeekeepers.com](http://www.backyardbeekeepers.com).

## ◆GEORGIA◆

**Henry County Beekeepers** will host a Beekeeping Short Course October 28 at Heritage Park, 07 Lake Dow Road, McDonough.

For information friend Henry County Beekeepers on Facebook or call 770.461.6686 or 678.983.7698.

**Georgia and Southeastern Beekeepers** will welcome Randy Oliver, October 6-7 in Griffin, GA for the Fall statewide meeting.

Other speakers include Jennifer Berry, Rusy Burlaw, Keith Delaplane, Tammy Horn and Kerry Owen.

Visit <https://gball17.wildapricot.org/event-2540629>.

## ◆ILLINOIS◆

**Northern IL Beekeepers Association** will present a day with Tom Seeley, September 9 in the Leucht Conference Center of McHenry County College, Crystal Lake.

Dr. Seeley will be speaking on his latest two books *Honeybee Democracy* and *Following the Wild Bees*. The meeting is free with lunch on your own.

For more information visit [NIBAinfo.org](http://NIBAinfo.org).

## ◆INDIANA◆

**The Beekeepers of IN** will hold their Fall meeting at Fourwinds lakeside Inn and Marina, October 27-28.

Guest speaker is Roger Hoopingarner. For reservations at the Inn call 812.824.2628 and mention Beekeepers of IN for a special rate.

For more information visit [http://indianabeekeeper.com/contact\\_us/fall\\_conference](http://indianabeekeeper.com/contact_us/fall_conference).

## ◆IOWA◆

**IA Honey Producers Association** will hold their 105th Annual meeting November 10-11 at Gateway Church of the Nazaren, 140 Gateway Drive, Oskaloosa.

Keynote speakers are Marion Ellis and Dennis vanEngelsdorp.

For more information contact Eve Banden Broek, [mrstheo@iowatelecom.net](mailto:mrstheo@iowatelecom.net) or 515.491.6760.

## ◆LOUISIANA◆

**21st Annual Field Day at USDA Honey Bee Lab, Baton Rouge** will be held October 21 at the lab, 1157 Ben Hur Road. Gates open at 9:30a.m.

Pre-registration is \$30/non-refundable. There will be talks from LA Beekeepers Assn and the staff of the lab.

For information visit [labeekeeper.org](http://labeekeeper.org) or Frank Rinkevich, 225.276.3998, Sandra Hineman, 225.767.9280.

## ◆NEW YORK◆

**Rochester Beekeepers** presents Peter Sieling, *The Mysteries of the Beehive Explained*, October 14, 1-3p.m. at Hansen Nature Center in Tinker Park, 1525 Calkins Road, Henrietta.

For information [Rochesterbeekeepers@gmail.com](mailto:Rochesterbeekeepers@gmail.com).

**Long Island 4th Annual Bee Conference** October 8, Farmingdale State College.

Pre-registration is \$65, includes breakfast and lunch. \$75 at the door. Speakers include Nicholas Nager, Jennifer Berry and Clarence Collison.

For information visit [www.longislandbeekeepers.org](http://www.longislandbeekeepers.org).

**Narrowsburg Honey Bee Festival** will be held September 23 in Narrowsburg from 11:00 a.m. to 5:00 p.m. with a variety of events including bee experts, local and mead tasting, a parade and more for the whole family.

The festival is free and open to the public.

Visit [www.narrowsburghoneybeefest.com](http://www.narrowsburghoneybeefest.com).

**Long Island Beekeepers Club** will host Debbie Delaney September 24, 2:00 - 4:30 p.m. at Smithtown Historical Society Frank Brush Barn, 211 East Main Street, Smithtown.

Debbie Delaney Assistant professor of Entomology at the University of Delaware.

For information contact [saw\\_whet@hotmail.com](mailto:saw_whet@hotmail.com).

## ◆OHIO◆

**East Central Ohio Beekeepers Association's** event of 2017 will be held September 23 at Zanesville Eagles, #302 Conference Hall, 1275 Market Street, Zanesville, 9:00 a.m.

Speakers include Diana Sammataro, Gary Reuter and Keith Delaplane.

For information contact [info@e-coba.org](mailto:info@e-coba.org).

**Annual HoneyFest**, presented by the Ohio Parks and Recreation Association, September 16, Delco Park, Kettering, 10:00 a.m. to 5:00 p.m.

For information contact [habitatcenter@ketteringoh.org](mailto:habitatcenter@ketteringoh.org) or 937.296.2477.

**The Ohio State University Bee Lab Webinars** are held the third Wednesday of the month at 9:00 a.m. EST.

September 20: Introduction to Prairie Habitat Creation – Shana Byrd.

To join a webinar follow the link and log in about 8:55 a.m. – <http://go.osu.edu/theOSUbuzz>.

## ◆OKLAHOMA◆

**The OK State Beekeepers Association** will have the annual meeting October 27-28 at the Will Rogers Garden Exhibition Center, 3400 NW 36th Street, Oklahoma City.

For more information visit [www.okbees.org](http://www.okbees.org).

## ◆OREGON◆

**OR State Beekeepers** will hold their Fall Conference October 27-29 at the OR Garden in Silverton.

Speakers include Sue Cobey, Virginia Webb, George Hansen, Ramesh Sagili, Dlina Nino, Judy Wu and more.

For more information visit [www.orsba.org](http://www.orsba.org).

## ◆WEST VIRGINIA◆

**WV Beekeepers Association Fall Conference** Celebrating their 100th anniversary, will be held September 22-23 at the Robert H. Mollohan Building at the High Tech Center in Fairmont.

Speakers include Alex Zomcheck, Joe Kovaleski and more. Early registration \$35/members includes Saturday lunch. After August 31 \$45. Non-member early registration \$42 or \$12.50 for Friday only.

For information contact [www.wvbeekeepers.org](http://www.wvbeekeepers.org).

## ◆TEXAS◆

**TX Beekeepers Association** will hold their annual convention November 9-11 at the Mayborn Convention Center in Temple.

Speakers include Jennifer Berry, Dewey Caron, Jerry Hayes and Ann Harman.

For more information visit [www.texasbeekeepers.org](http://www.texasbeekeepers.org).

## ◆WASHINGTON DC◆

**17th Annual North American Pollinator Protection Campaign International Conference** will be October 17-19 at the American Farm Bureau Federation, 600 Maryland Ave., SW, Ste 1000 W.

Speakers include Sam Droege, Jeff Pettis, Tammy Horn, Craig Regelbrugge, Deirdre Remley, Jane DeMarchi, Mary Phillips and Danielle Downey, Pete Berthelsen, Zac Browning.

Visit [kr@pollinator.org](http://kr@pollinator.org); [www.NAPPC.org](http://www.NAPPC.org).

## ◆WASHINGTON◆

**The NW District Beekeepers Association** will host Randy Oliver, September 9 at Everett PUD Auditorium, 2320 California Street, Everett, from 1-5pm.

The cost is \$25 and seating is limited. Tickets can be purchased at [www.brownpapertickets.com](http://www.brownpapertickets.com) by searching for Randy Oliver.

Contact Mike Kossian, [MikeKossian@hotmail.com](mailto:MikeKossian@hotmail.com).

## ◆WISCONSIN◆

**WI Honey Producers Association** will hold their Fall convention November 2-4 at Holiday Inn Eau Claire South, 4751 Owen Ayres Court. Hotel reservations 715.830.9779.

Speakers include Ross Conrad, David Tarpy, Marla Spivak.

For more information visit [www.wihoney.org/](http://www.wihoney.org/).

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Please email Amanda at [Amanda@BeeCulture.com](mailto:Amanda@BeeCulture.com) with the number of magazines needed, a complete mailing address and a contact person.

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**T**he pot grower down the road told me his bees are doing fabulous. I asked him how his mites were doing. “What mites?” he queried. I said, “We just had the Colorado State Beekeepers meeting practically in your front yard a couple of weeks ago. You could have learned all about *Varroa* mites.”

“I heard about that meeting,” he said, “but we were gone that weekend.”

I advertised the hell out of this meeting, and I have other beekeeper neighbors who know nothing about bees but were still too busy to learn when they had a chance.

Well, my Colorado River Valley bees aren't doing fabulous. Today is July 9, and we haven't seen a raindrop since early June. The mercury tops out in the low nineties. We've had wildfires, slurry bombers and helicopter water drops.

Strong hives made a little honey, but I don't have very many of those. I split every hive I could in April and May. The bees mostly missed the dandelions due to stormy weather, and the first cutting of alfalfa yielded little nectar.

Right now the little darlings can't even seem to find pollen. I'm feeding pollen substitute to maintain healthy brood and keep Nosema at bay.

Derrick told me he only quit feeding syrup three weeks ago. He got his bees strong enough that they were able to make some honey. Me? I haven't got a full honey super on any of 90 colonies. Maybe there's a lesson here.

Meanwhile, my two high altitude yards continue to plug out honey supers. Diversification is not a bad thing.

At a recent bee meeting, Derrick did a slide show on his strategies for successful commercial beekeeping. He threw in some slides of semi loads of bees stuck axle-deep in the mud during this year's rainy California almond season. Just when the situation looked perfectly hopeless, a guy showed up with a backhoe and tried one way after another to extricate Derrick's mess. As soon as he finally winched the trucks to drier ground, he vanished.

Next day Derrick tried to find his Good Samaritan, but all he had to go on was a first name – Jose.

When he finally found his man, Derrick couldn't get him to take “a couple of hundred bucks.” Jose didn't do it for the money, he explained. He just wanted to help a stranger.

This story should be in the Bible. Maybe it already is.

I went to this meeting of the Colorado Professional Beekeepers Association (CPBA) for a couple of reasons: One, to offer an olive branch from my own Colorado State Beekeepers Association (CSBA). The CPBA recently broke away from the CSBA over philosophical differences, and some bad blood. Two, to carry the gospel that neonicotinoid pesticides are bad for pollinators.

Lyle leads the CPBA, and he's a big man with a big message: *Varroa* mites are the culprits driving dramatic honey bee losses. Forage loss is a huge problem. Pesticides are a relatively minor nuisance. He's not too fond of backyard beekeepers – or any beekeepers, for that matter – who allow mites to decimate their bees.

He and I share some common ground, and we have some differences.

The featured speaker was Dick Rogers, an entomologist and research manager from Bayer, a company that manufactures neonics. It piqued his interest when I announced that the CSBA joined with the American Beekeeping Federation and the American Honey Producers Association in signing a petition to the EPA to register neonic seed coatings as pesticides.

Arathi Seshadri, a biologist from Colorado State University whose work is supported financially by the CPBA, spoke on controlling American foulbrood within the guidelines of the new animal antibiotic regulations.

Lyle argued that the neonics are not a problem for honey bees, and

that neonics in fact reduce the need for spray from chemicals that do harm bees.

I couldn't let this go unchallenged, so I peppered Dick – the Bayer guy – with questions about research demonstrating that the neonics are particularly hard on native pollinators. Well, he just hadn't seen anything that backed this up. I mentioned a Swedish study on seed-coated canola that showed dramatic decline of bumblebees and solitary bees. He was unfamiliar with that study.

When an industry researcher states that Bayer studies bumblebees' response to neonics, and everything looks rosy, but he hasn't heard about an important independent research project on the same topic, I start to wonder.

I referenced Marla Spivak's remarks at the 2013 Western Apiculture Society conference, in which she stated that native pollinators tend to be more sensitive to pesticides than honey bees, due at least in part to the pesticide-buffering effects of vitellogenin produced in the heads of nurse honey bees. Arathi the CSU biologist said that I was misinterpreting Marla's remarks.

I started feeling a little picked on, even though I asked for it. At one point I said, “Look, I didn't come here to start a food fight.”

After the meeting, Dick and I spoke in private. When I asked about soil contamination from neonic-treated seeds, he said the neonics bind to rocks in the soil and biodegrade over time. He told me he couldn't explain why so much peer-reviewed research cast the neonics in an unfavorable light.

We all want the truth, the whole truth and nothing but the truth, right? So we need to be careful that we don't embrace conclusions that seem reasonable and true, only to work backwards, cherry picking evidence to back those conclusions.

We need to listen to and talk to people with whom we don't agree. How else are we going to bring them to the light?

Later, Lyle and I chatted outside the meeting room on a hot July afternoon in Salida, Colorado. I can always learn something from Lyle. A stone's throw away, boaters and floaters frolicked in the Arkansas River. The gal Marilyn tugged on my arm. “Let's go,” she said finally. “We need to jump in the river.”

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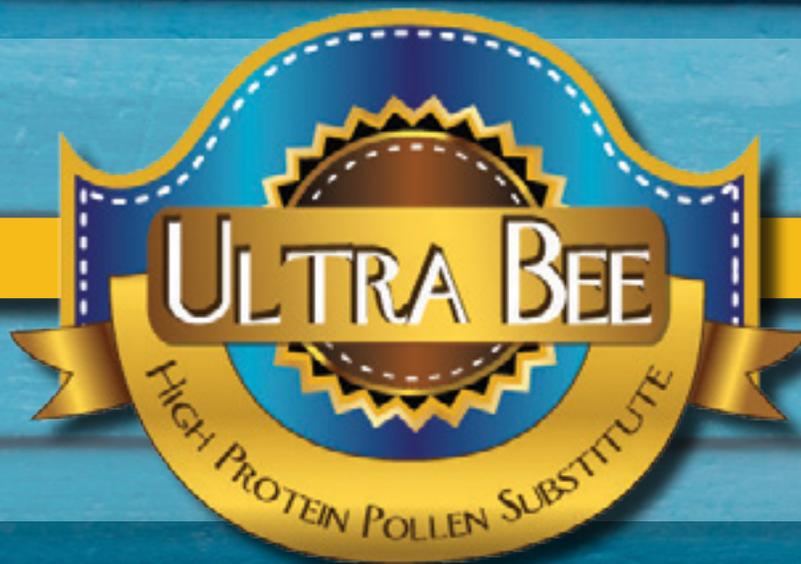
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