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#### **Bee Culture**



#### Letters to the Editor

Hello Jerry, Jen and Stephanie!

I am forwarding this text message from one of your admiring fans.

"Tell Jerry I love the Martha The Mite video shared in the November 16th Catch the Buzz! I need a Martha The Mite in my bee yards. Getting difficult to find enough mites to verify that the swarms I'm catching have very aggressive chewing behaviors." Your Dec BC issue is Fabulous!

Barb Bloetscher

. .

Morning Jerry and thanks for the PDF I have subscribed for years and it is a great deal. I am building a new welcome letter for our membership and I want to make sure they know this exists either way they need to get the data that you include every month. By the way the digital version makes it really nice to be able to read while away from my office glad to see it on this list.

Ray Shadow Missouri State Beekeepers Association President Bee Culture in today's mail!! ♥ ✔ Tom is engrossed. We look forward to its arrival each month. Especially on a day like today.

Shared by Barb Bloetscher

From one of our Honey Reporters:

"I pass on all of my print issues to an enlisted soldier who wants to become a beekeeper when his tour is up. I've had him in my apiary several times this year. I've only been a beekeeper for 6 years and try to answer his questions the best I can. Your articles are very helpful. Keep up the good work."

Kevin

From one of our Honey Reporters:

"Love the magazine, keep up the good work!

Jeff

• • • • • • • • • • •

We need beekeepers who are willing to talk to the media about our issues and their individual experiences. Many of us in beekeeping like to complain about reporters' ignorance of honey bee issues or the coverage we receive, but then many decline to talk to those same reporters. It is not necessary to talk to everyone about everything, but agreeing in advance to be a resource and to allow to refer reporters to you (when appropriate) can lead to improved coverage of our industry's perspectives and ultimately influence public opinion.

From the editor, Jerry Hayes





Photo By: Wahyu Setyanto on Unsplash

## Humor in the Hive & Disastrous Decisions

**Attention All Beekeepers!** 

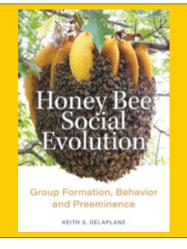
One of our authors Ed Simon is searching for individual anecdotes of both funny beekeeping stories and disastrous decisions. Every beekeeper has a couple things that happened or were said that were amusing or outright funny. There are also times when some decisions were made in which the outcome did not end in what you intended. They are the times that, if you had given five more minutes to formulating your decision, the results would have been much more to your liking. All in all, with your experience in beekeeping, I am sure this has happened when you look back you thought that whatever happened was truly memorable. If you have anything funny or just humorous, please send them to: SimonEdwin41@gmail.com.

#### **January 2025 Correction**

#### Hello Bee Culture Readers!

We would like to sincerely apologize for a mistake in our January 2025 Issue. On page 70, the Book review titled, Honey Bee Social Evolution: Group Formation, Behavior and Preeminence by Keith S. Delaplane, published by Johns Hopkins University Press, Nov. 2024 was miscredited. This book review was written by Jeremy Barnes. Our deepest apologies to both Keith S. Delaplane and Jeremy Barnes for this mistake.

This book can be purchased at: https://www.press.jhu.edu/search?keyword=Honey%20Bee%20Social%20Evolution&f%5B0%5D=content\_type%3Ajhup\_title





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## **NEXT MONTH**

#### Region 1

- Clean out bottom boards and entrances
- Feed if light in weight
- On a warm break in weather alcohol sample for mites
- Feed, feed some more
- · Check hives weight
- Don't feed pollen sub if they can't fly and poop

#### Region 2

- Feed 2:1 sugar syrup
- Mite treatment
- · Keep feed available
- Make splits (KY)
- · Replace old comb and frames
- · Reverse hive bodies if needed
- · Build boxes

#### Region 3

- SBH treatment
- · Get ready to split
- · Feed candy boards
- Reduce wind exposure
- Is queen starting to lay?

#### Region 4

- · Feed as needed
- Sample and treat for mites
- Is the queen starting to lay?
- · Set up hives for splitting
- · Clean dead outs
- Equalize colonies
- Reverse boxes if colony is at top

#### Region 5

- Read Bee Culture
- · Check food stores
- Emergency feed
- Pre-order queens
- · Clean bottom board of dead bees
- · Feed and mites, mites and feed
- · Check for dead outs

#### Region 6

- Do they have enough stores to last to honey flow?
- Add pollen patties
- Sample and treat for mites
- Spring hive inspection
- · Monitor and feed
- Are there swarm cells?
- Mite treatment

#### Region 7

- · Start Spring feeding
- · Biweekly hive inspections
- · Pull feeders
- · Get super and frames ready
- · Check for dead outs
- Remove colonies stored in Winter warehouse
- Add 2nd brood box

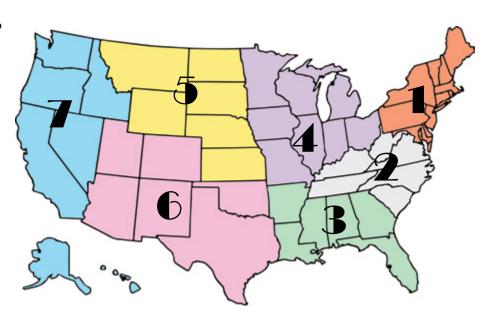
#### **MARCH**

#### Honey Reporters Wanted

We are expanding our Honey Reporter population in EVERY region. We ask that you fill in most of the sections, most months, and our short survey at the bottom. We give you a FREE subscription for your service. So if you are interested fill out the form https:// forms.gle/EnZW531NHM7sbMUz8 OR send an email to Stephanie@Bee Culture.com and put REPORTER in the subject line. Include name, email, phone number and mailing address and we'll get you the next Honey Report form. Sign up today and be a part of the BEST Monthly Honey Price and Beekeeping Management Report in the industry.



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## FEBRUARY - REGIONAL HONEY PRICE REPORT

REPORTING REGIONS												
	1	2	3	4	5	6	7				His	tory
								_	_		Last	Last
EXTRACTED HONEY		SOLD						Range	Avg.	\$/lb	Month	Year
55 Gal. Drum, Light	2.20	-	2.83	3.10	3.13	1.90	3.00	1.90-3.25	2.81	2.81	2.72	2.76
55 Gal. Drum, Ambr	2.00	-	2.67	3.10	3.25	1.80	2.85	1.80-3.25	2.72	2.72	2.76	2.70
60# Light (retail)	241.67			221.67	243.33		350.00	100.00-450.00	257.87	4.30	257.10	243.37
60# Amber (retail)	244.44	358.33	238.33	222.50	250.00	211.25	237.50	92.00-450.00	247.07	4.12	238.74	245.83
WHOLESALE PRICES SOLD TO STORES OR DISTRIBUTORS IN CASE LOTS												
1/2# 24/case	112.22	168.00	120.00	93.48	120.00	90.00	-	81.00-168.00	110.84	9.24	109.17	95.57
1# 24/case	173.48	237.60	164.00	144.40	185.00	140.00	384.00	96.00-384.00	176.74	7.36	168.87	156.06
2# 12/case	145.92	244.00	153.33	126.20	-	156.00	156.00	90.00-384.00	153.62	6.40	140.83	142.10
12.oz. Plas. 24/cs	132.50	288.00	123.20	132.73	140.67	120.00	132.00	93.60-288.00	137.38	7.63	131.33	135.17
5# 6/case	169.35	-	-	136.11	-	-	-	108.00-280.50	154.58	5.15	160.80	153.12
Quarts 12/case	180.00	201.33	209.50	167.00	196.00	270.00	300.00	120.00-384.00	205.16	5.70	223.99	198.96
Pints 12/case	132.00	146.67	127.40	108.27	123.50	135.00	154.50	82.00-192.00	130.87	7.27	140.45	123.61
RETAIL SHELF PRIC	ES											
1/2#	6.74	7.68	5.89	5.91	7.50	5.00	9.50	3.50-12.00	6.59	13.19	8.02	6.25
12 oz. Plastic	8.86	10.43	8.21	7.38	7.60	7.50	19.00	4.59-30.00	8.87	11.83	8.70	7.81
1# Glass/Plastic	10.57	12.58	10.58	9.50	9.50	11.08	18.00	6.49-24.00	11.05	11.05	11.41	10.62
2# Glass/Plastic	18.04	20.50	19.91	17.25	16.50	18.25	23.00	10.99-32.00	18.95	9.47	19.89	18.34
Pint	11.42	14.67	12.17	13.73	12.99	17.50	21.00	8.00-35.00	13.97	9.31	14.62	14.11
Quart	20.50	25.71	23.01	21.68	21.74	32.33	29.67	11.20-45.00	23.67	7.89	24.70	22.88
5# Glass/Plastic	38.45	41.50	46.17	34.95	30.00	32.00	-	12.00-75.00	37.34	7.47	34.69	37.30
1# Cream	13.14	15.25	13.11	11.47	10.00	15.00	14.00	8.00-25.00	13.13	13.13	14.19	11.80
1# Cut Comb	15.35	17.16	14.33	16.88	15.00	15.00	-	8.00-25.00	15.72	15.72	16.02	16.16
Ross Round	14.32	17.50	-	13.33	16.00	-	16.00	10.00-20.00	15.00	19.99	13.89	13.75
Wholesale Wax (Lt)	8.81	6.38	7.79	7.58	4.25	8.50	4.50	1.50-10.00	7.53	-	7.45	7.42
Wholesale Wax (Dk)	7.85	7.17	6.08	7.33	-	-	-	4.50-10.00	7.10	-	6.21	6.29
Pollination Fee/Col.	88.33	76.25	127.50	165.00	-	128.61	50.00	50.00-250.00	107.22	-	104.69	96.04
Almond Fee Only	-	-	200.00	160.00	225.00	-	-	160.00-225.00	195.00	-	-	184.17
Price of Nucs	178.33	191.25	182.50	185.40	-	235.00	225.00	135.00-235.00	189.10	-	185.33	186.96
Price of Packages	157.50	145.00	133.75	142.67	169.80	169.80	250.00	125.00-250.00	152.09	-	144.75	159.46

Please note: anywhere within each region that there is a '-' it is because no information was sent to us for that specific item in that region.

#### How do you compare to our honey reporters? All data collected is from November/December 2024.

#### Average Honey Flow Time and Amount per Region

Region 1:

Timing of Flow: No flow Amount of Flow: No flow

Region 2:

Timing of Flow: No flow Amount of Flow: No flow

Region 3:

Timing of Flow: Normal Amount of Flow: Average

Region 4:

Timing of Flow: No flow Amount of Flow: No flow

Region 5:

Timing of Flow: No flow Amount of Flow: No flow

Region 6:

Timing of Flow: No flow Amount of Flow: No flow

Region 7:

Timing of Flow: No flow Amount of Flow: No flow

#### Mite Treatment per Region

Region 1: Most used no mite treatment due to previously doing one or weather.

Region 2: Most used either an Oxalic Acid product or no mite treatment.

Region 3: Most used no mite treatment due to previously doing one or weather.

Region 4: Most used either an Oxalic Acid Vapor product or no mite treatment.

Region 5: Most used an Oxalic Acid product.

Region 6: Most used an Oxalic Acid product.

Region 7: Most used no mite treatment due to previously doing one or weather.

#### Top Blossoming Plants per Region

Region 1: Nothing

Region 2: Dandelion Region 3: Goldenrod

Region 4: Dandelion

Region 5: Nothing

Region 6: Nothing

Region 7: Nothing

#### Overall Top Blossoming Plants

Most responded with no plants

blooming due to Winter setting in, but a few plants were still blooming in a couple of areas: Dandelion, Camellia, Goldenrod, Witch Hazel

## National Survey Indicates Highest Bee Colony Losses in 14 Years

This article was originally published in Auburn University's College of Agriculture



AUBURN, Ala. – The annual **U.S. Beekeeping Survey**, results of which will be released Thursday, Dec. 5, at noon CST, indicates the highest colony losses since the 2010-11 beekeeping season, when colony loss rates were first determined. U.S. beekeepers lost an estimated 55.1% of their managed bee colonies in 2023-24 – 14.8 percentage points higher than the 13-year average annual loss rate of 40.3%.

This surge in colony losses was driven largely by losses among commercial beekeepers managing more than 500 colonies.

"Backyard beekeepers traditionally experience greater losses than commercial beekeepers, but this time around it was flipped. The commercial beekeepers lost more," said Geoff Williams, an associate professor at Auburn University and director of the Auburn University Bee Lab.

In 2023-24, commercial beekeepers lost 55.7% of their managed colonies, which is 16.8 percentage points higher than their 13-year average of 38.9%.

While the survey did not investigate the cause of such losses, North Dakota state bee inspector Samantha Brunner said there likely are a variety of factors.

"Varroa mites are always a prob-

lem and could be a factor. Also, if honey flow lasts longer than expected, it could delay treatment and cause things to snowball, leading to higher losses. In all likelihood, there were a variety of factors such as these," she said.

Anne Marie Fauvel, program director for the American Honey Producers Association, agreed, saying that "assessment of commercial beekeeping colonies going into the 2023-24 Winter revealed a significant uptick in *varroa* mites late in the Fall compared to previous years, warning beekeepers of potentially high losses."

The 2023-24 survey was open to beekeepers May 1-31, 2024, and reports on the period of April 1, 2023, to April 1, 2024. The survey is based on the responses of 1,652 beekeepers who collectively managed 337,134 colonies.

Commercial and sideliner beekeepers – defined as managing more than 500 colonies or 51-500 colonies, respectively – represented 6.9% of the respondents and 96.9% of the managed colonies in the survey. Backyard beekeepers – defined as managing 50 or fewer colonies – represented 93.1% of the respondents and 3.1% of the managed colonies.

"This survey sheds light on the current state of the beekeeping industry in the United States, especially concerning the rate of colony loss and perceived causes of colony loss by beekeepers," Williams said. "Building on the large dataset already developed by the Bee Informed Partnership, University of Maryland, and Auburn University, this year's survey, in partnership with the Apiary Inspectors of America, will allow us to keep studying important drivers of honeybee colony loss, like *varroa* management and weather."

Williams added that the annual survey's corresponding scientific articles are among the most cited in the fields of beekeeping and honey bees.

The 2023-24 survey was designed and administered by Auburn University and Apiary Inspectors of America. The survey was previously administered by the Bee Informed Partnership, the University of Maryland and Auburn University. This year, the One Hive Foundation, Project *Apis m*, National Honey Board, American Beekeeping Federation, and the American Honey Producers Association provided financial support.

The 2023-24 survey results are available on the Apiary Inspectors of America website at apiaryinspectors. org/US-beekeeping-survey.

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# St. Valgnting's Pay



St. Ambrose (from Bees: A Honeyed History)

Saint Valentine is a 3rd-century Roman saint that we associate with a tradition of love, romance and happy marriages. St. Valentine is also, along with St. Ambrose, commonly known as the patron saint of beekeeping. He is said to have kept a hive in the garden of his church and is believed to ensure the sweetness of honey. https://www.worldvision.org/economic-empowerment-news-stories/saint-valentine-day-beekeepers His celebratory Church Day is February 14, the Dia de Amor – the day of love.

Valentine was a clergyman who ministered to persecuted Christians, and people with epilepsy. He is one of a dozen Saint Valentines in Roman and eastern Orthodox churches. Legend has it that the Roman Emperor Claudius II banned marriages, because he thought single men made better soldiers. Valentine continued to secretly marry couples. For his defiance of the emperor, he was beheaded on order from the emperor.

While imprisoned, Valentine is said to have sent the first "valentine" greeting after he fell in love with a young girl – possibly his jailor's daughter – who visited him during his confinement. Before his death, it is alleged that he wrote her a letter signed "From your Valentine."

Later, in the 15<sup>th</sup> century, the Roman Church sought to terminate



the Roman feast of Julius Caesar's Lupercalia (15th February). Individuals celebrated this festival with dancing, drinking, sacrifice, love-lotteries and wild sexual expression. The alternative the church sought to promote was Saint Valentines Day on the 14th of February to celebrate romantic love.

Yet another version, once popular in France and England, is on February 14<sup>th</sup>, the 'Ides of February', nature is rising, birds beginning to pair and plan the year ahead, spring flowers are opening and honey bees are expanding and keen to find forage. By managing their hives and caring for their bees, beekeepers ensure that their bee colonies flourish and the honey continues its sweet flow. The Birds 'n the Bees version if you will of Saint Valentine as patron saint of beekeeping.

Saint Ambrose, a Bishop of Milan is perhaps more widely celebrated as the patron saint of beekeep-

ing. As legend goes, when St. Ambrose was a child, his face was swarmed by bees, and though they did not sting him, they did leave droplets of honey on his face and tongue. This event led him into a life

of oratory and a teacher of church doctrine.

Dewey M. Caron

One of Ireland's native saints is St. Ggbnait (also known as St. Abigail or St. Deborah). She was a beekeeper who would turn her bees into soldiers to avoid stealing of people's cattle by rustlers. Her feast day is February 11, a week before St. Valentine.

Stained glass window of St. Gobnait (note bees)







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## FOUND IN TRANSLATION

When is it Time for a Comb-over?

Jay Evans, USDA Beltsville Bee Lab



Listen along here! https://www.beeculture.com/

In December 2024, veteran beekeeper Bob Binnie gave the American Honey Producers Association an update on his learned belief that rotating out comb from his operation is critical for healthier, more plentiful bees. He started on this path after reading a 2001 paper by Jennifer Berry and Keith Delaplane that followed colonies for three (!) years and showed better brood patterns across years in colonies built around new wax versus darkened wax of an indeterminate but substantial age (Berry, J. A., & Delaplane, K. S. (2001). "Effects of comb age on honey bee colony growth and brood survivorship". Journal of Apicultural Research, 40(1), 3-8, https://doi.org/10.1080/00218 839.2001.11101042). This made me wonder about the state of the art for this question, since it has surely been on the minds of beekeepers and researchers for a while. Several recent papers have reinforced the need to remove old comb, whether to reduce pesticide residues or infectious microbes, while also exploring means to redeem used comb, or at least wax, as a safe component of hives.

Megan Colwell from the University of Manitoba devoted her PhD work to a set of clever experiments aimed at assessing the movement of harmful viruses from diseased bees into frames of comb and then back out into bees of later generations (Colwell, M. "A study on novel transmission routes of honey bee (Apis mellifera L.) viruses with a focus on the epidemiological role of wax comb", 2022, University of Manitoba). A practical outcome of this work was to see what beekeepers might do, aside from constant comb rotation, to reduce the impacts of lingering viruses. She found

found-in-translation-59/ that comb from deadout colonies that was left to rest for 30 days showed a substantial (20-50% depending on the virus) decrease in virus levels (Colwell, M.J., Pernal, S.F. Currie, R.W. (2024) "Treatment of waxborne honey bee (Hymenoptera: Apidae) viruses using time, temperature, and electron-beam irradiation." Journal of Economic Entomology 117:34-42. doi:10.1093/jee/toad216). Surprisingly, the temperature at which combs were stored did not matter much across the tested range, which covered climatic extremes in Manitoba (from -20°C to +20°C). In addition, the use of expensive 'e-beam' irradiation only marginally reduced virus levels in treated comb compared to control comb that went on the same 4600 km round trip to the radiation bank but was not subjected to radiation. All tested comb tended to hang onto at least some viruses, as assessed by genetic tests for the integrity of viral RNA genomes. So, is a 20-50% reduction of pathogens over time a sign your dead-out combs are safe? Maybe so for viruses, where the goal is not to eliminate them from the colony (impossible) but to lower disease by reducing the contagious surfaces encountered by future bees. This is the logic behind wiping deck chairs with bleach between cruises to reduce future cases of norovirus; somebody's auntie is still going to get sick, but hopefully a higher proportion of guests will have a pleasant cruise and enjoy the buffets. Regardless, it is promising that viruses show some decay over a matter of weeks, but this work suggests that more can be done to accelerate this decay.

To that end, David Saleh and colleagues tried to knock out viruses by heating colony food resources to



more extreme temperatures of 70°C (158 degrees Fahrenheit) for one hour. Importantly, while most studies have used RNA integrity as a measure for viral infectivity, this study went an extra step by inoculating healthy bees with viral soups rescued from treated hive stores (fresh pollen and bee bread). Extreme temperatures did the trick, almost completely killing viral activity in hive stores. Such high temperatures will melt wax, so these researchers also tested heat treatments just below the wax melting point (at or below 60°C). They achieved decent inactivation of viruses at 60°C (over 97% inactivation after one hour), suggesting that a heat pulse just below melting temperatures could work for sterilizing entire frames (Saleh, D. S., Story, C. M., Palmer, W., Ha, G. J., Madella, S., Ryabov, E. V., & Corona, M. (2024). "Deformed wing virus in bee bread: infectivity and thermal inactivation". Journal of Apicultural Research, 63(4), 711-720. https://doi.org/10.1080/ 00218839.2024.2357448).

As beekeepers know, both miticides and crop-protection pesticides can also accumulate in wax and impact bee health. In the miticide class, wax contaminated with the organophosphate coumaphos has been shown to impact queen and drone health. This fact, coupled with the high absorbance of coumaphos into beeswax, means that this once-vital but rarely used mite treatment is still found in older comb at worrisome

levels. Rogan Tokach and colleagues at the University of Nebraska recently embarked on a study to try to quantify the impacts of comb containing high pesticide residues on the abilities of colonies to raise emergency queens. This work was precipitated by an extreme observation: a bee vard near the University's Extension Research Facility that simply could not sustain bee life over multiple years thanks to unusually high usage of crop pesticides. The researchers established nucleus colonies with one frame of foundation and two frames of drawn comb containing pollen and honey. These drawn frames came from either control colonies in good health or colonies that had died in prior years in the yard with acute pesticide poisoning. They added a fourth frame, containing eggs, into each box along with 3 ½ pounds of worker bees and then waited for those workers to seize the day by rearing emergency queens. Successful queen replacement occurred in 84% of the control colonies and only 33% of colonies carrying contaminated comb and food stores, indicating a longterm effect of accumulated pesticides (Tokach, R.; Smart, A.; Wu-Smart, J. (2023) "Re-using food resources from failed honey bee (Apis mellifera L.) colonies and their impact on colony queen rearing capacity." Scientific Reports 13. doi:10.1038/ s41598-023-44037-2). Their analyses suggest that pesticide impacts came from stored pollen consumed by nurse bees as they raised brood.

To help address this potential problem, Christina Kast and colleagues sought ways to cleanse and reuse wax from contaminated frames. First, they confirmed that a diverse set of pesticides found in pollen were readily absorbed by wax. They then tested both heat and a water rinse as means of removing embedded pesticides prior to producing new foundation. While melting wax and suspending it briefly in water was enough to decrease levels of water-soluble neonicitinoid pesticides, this process unfortunately had little effect on the majority of tested pesticides (Kast, C., Müller, J. & Fracheboud, M. (2024) "Temporal entry of pesticides through pollen into the bee hive and their fate in beeswax." Environ Sci Pollut Res 31, 61060-61072. https://doi.org/10.1007/ s11356-024-35224-3). A more advanced way to purify wax involves

using the solvent methanol during the melting process to truly liberate wax from most accumulated chemicals. José Manuel Flores and colleagues confirmed this reduction in chemicals but worried that bees would notice and shun recently stripped wax. While it took an extra day for queens to start laying on comb drawn from treated wax, once they started doing so colonies produced at equal rates. This suggests that methanol treatment during wax rendering might indeed be a safe way to return beeswax to a more pure state (Flores, J.M.; Luna, A.; Rodríguez Fernández-Alba, A.; Hernando, M.D. Acceptance by Honey Bees of wax decontaminated through an extraction process with methanol. Insects 2023, 14, 593. https://doi.org/10.3390/ insects14070593).

The ghosts of past threats need not ruin your use of combs, even from deadout colonies. For now, the recommendation remains to rotate out comb every few years, depending on cycles of brood and colony exposure to high levels off pesticides. To combat viruses after a colony loss event, letting combs sit for at least 30 days seems advisable. longer if you can keep them safe. This is, of course, not advisable for colonies with any signs of AFB, which should be discarded, and the jury is still out on the benefits and scale of a 'time out' needed after symptomatic EFB. Combs from colonies facing an acute pesticide event should probably be taken out of circulation completely unless you have access to advanced wax purification with methanol or another solvent that will pull wax-loving chemicals free. Meanwhile, do what you can to manage disease and exposure to pesticides. This will give your bees and their homes one less thing to worry about. BC







#### **Pesticide Detoxification**

#### **Clarence Collison**

"Pesticides" is a broad term denoting any substance that is used to eliminate pest species and can include insecticides, herbicides, fungicides, and nematicides. Pesticides represent a diverse array of chemical classes with different modes of action, and as such, examining the effects of pesticides on honey bees is not a straightforward endeavor. Adding further complication, honey bees often encounter many different chemicals simultaneously (Johnson et al., 2010; Long and Krupke, 2016; Chauzat et al., 2006; Mullin et al., 2010) owing to their ubiquity in commercial pollination, their generalist foraging strategy, and their large foraging ranges that can cover hundreds of square kilometers (Beekman and Ratnieks, 2000). These different chemicals, along with adjuvants and other additives in the applied formulations, can interact with one another to produce additive or sometimes synergistic effects in bees and other insects (Zhu et al., 2017; Tosi and Nieh, 2019; Mullin et al., 2015) (Harwood and Dolezal, 2020)."

"A given pesticide's toxicity is also not consistent among all honey bee colony members, with larvae being especially susceptible (Dai et al., 2010; Vázquez et al., 2018; Zhu et al., 2014; Cousin et al., 2013; Gregorc and Ellis, 2011; Mussen et al., 2004; Atkins and Kellum,

1986). In fact, pesticide toxicity can vary with many factors, including caste (Dahlegren et al., 2012), age (Rinkevich et al., 2015), season (Smirle and Winston, 1987; Wahl and Ulm, 1983), genetics (Rinkevich et al., 2015), and nutritional state (Wahl and Ulm, 1983). In this latter regard, plant pollens and nectars contain many phytochemicals that up-regulate the expression of detoxification genes and can increase bees' tolerance to some pesticides (Liao et al., 2017; Mao et al., 2011). It should also be noted that honey bees have fewer detoxification genes than solitary insect species (Claudianos et al., 2006) (Harwood and Dolezal, 2020)."

"A pesticide's toxicity and sublethal effects depend on how an organism metabolizes and detoxifies the particular compound. There are several families of enzymes involved in detoxification pathways, but the most prominent and well-studied are the cytochrome P450 monooxygenases (Li et al., 2007). Detoxification is typically initiated when a P450 enzyme targets specific chemical structures on the xenobiotic molecule (a chemical compound that is foreign to a living organism) and catalyzes its reduction into metabolites. These metabolites are then bound by other enzymes that allow for transport and eventual secretion of the metabolite. Some pesticides can interfere with the P450 function (Feyereisen, 2015), and some synergists are specifically added to insecticide formulations for this purpose to increase toxicity towards target species (Harwood and Dolezal, 2020)."

"One of the principal mechanisms used by insects to escape the adverse effects of both natural and synthetic toxins, such as nicotine and the neonicotinoids, is metabolic resistance. The major enzyme superfamilies responsible for the metabolism or detoxification of toxins are the cytochrome P450 monooxygenases (P450s), glutathione transferases (GSTs) and carboxylesterases (COEs) (Li et al., 2007). The sequencing and annotation of the honey bee genome revealed a 50% or greater reduction in the number of genes encoding for these enzyme families relative to other insect genomes (Claudianos et al., 2006) (Rand et al., 2015)."

Beekeepers pesticide use





Photo By: Yun Cho on Unsplash

"Insecticides are thought to be among the major factors contributing to current declines in bee populations. However, detoxification mechanisms in healthy, unstressed honey bees are poorly characterized. Alkaloids are naturally encountered in pollen and nectar and we used nicotine as a model compound to identify the mechanisms involved in detoxification processes in honey bees. Nicotine and neonicotinoids have similar modes of action in insects. Our metabolomic and proteomic analyses show active detoxification of nicotine in bees, associated with increased energetic investment and also antioxidant and heat shock responses. The increased energetic investment is significant in view of the interactions of pesticides with diseases such as Nosema spp which cause energetic stress and possible malnutrition. Understanding how healthy honey bees process dietary toxins under unstressed conditions will help clarify how pesticides, alone or in synergy with other stress factors, lead to declines in bee vitality (Rand et al., 2015)."

"Honey bees' genome is characterized by a paucity (a small number) of genes associated with detoxification, which makes them vulnerable to specific pesticides, especially to combinations of pesticides in real field environments. Many studies have investigated the mechanisms involved in detoxification of xenobiotics/ pesticides in honey bees, from primal enzyme assays or toxicity bioassays to characterization of transcript gene expression and protein expression in response to xenobiotics/insecticides by using a global transcriptomic or proteomic approach, and even to functional characterizations. The global transcriptomic and proteomic approach allowed us to learn that detoxification mechanisms in honey bees involve multiple genes and pathways along with changes in energy metabolism and cellular stress response. P450 genes, is highly implicated in the direct detoxification of xenobiotics/insecticides in honey bees and their expression can be regulated by honey/pollen constitutes, resulting in the tolerance of honey bees to other xenobiotics or insecticides. P450s is also a key detoxification enzyme that mediate synergism interaction between acaricides/insecticides and fungicides through inhibition P450 activity by fungicides or competition for detoxification enzymes between acaricides. With the wide use of insecticides in agriculture, understanding the detoxification mechanism of insecticides in honey bees and how honey bees fight with the xenobiotis or insecticides to survive in the changing environment will finally benefit honey bees' management (Gong and Diao, 2017)."

"Variation in polysubstrate monooxygenase activity, as measured by the epoxidation of aldrin, was studied in colonies of the honey bee. Significant differences were found among colonies in Spring, Summer, and Fall. In addition, colonies varied in their detoxification capacity from season to season, being least able to metabolize aldrin in the Spring. Significant regression of the  $\rm LD_{50}$  of diazinon on aldrin epoxidase activity indicated the involvement of these enzymes in determining intercolony diazinon resistance. The results also suggest that studying a number of populations with quantitatively different monooxygenase activities can give information on the in vivo metabolism of phosphorothioate insecticides (Smirle and Winston, 1987)."

"Colonies of the honey bees showed variation in tolerance to the insecticides diazinon, propoxur, aldrin and carbaryl. Tolerance to diazinon and propoxur was positively related to midgut mixed-function oxidase and glutathione transferase enzyme activities, but tolerance to aldrin was inversely related to these enzymes. Differences in tolerance to carbaryl were evident among colonies but were not related to enzyme activity levels. Linear regression models derived from these data may be used to predict colony tolerance from enzyme activity and may enable the selection of tolerant strains of bees that could maintain efficient pollination in areas of extensive insecticide use (Smirle, 1990)."

"Acephate (organophosphate) is frequently used to control piercing/sucking insects in field crops in southern United States, which may pose a risk to honey bees. In this study, toxicity of acephate (formulation Bracket®97) was examined in honey bees through feeding treatments with sublethal (pollen residue level: 0.168 mg/L) and median-lethal (LC<sub>50</sub>: 6.97 mg/L) concentrations. Results indicated that adult bees treated with acephate at residue concentration did not show significant increase in mortality, but esterase (an enzyme that accelerates the hydrolysis or synthesis of esters) activity was significantly suppressed. Similarly, bees treated with binary mixtures of acephate with six formulated pesticides (all at residue dose) consistently showed lower esterase activity and body weight. Clothianidin  $\lambda$ , cyhalothrin, oxamyl, tetraconazole and chlorpyrifos may interact with acephate significantly to reduce body weight in treated bees. The dose response data (LC50: 6.97 mg/L) revealed a relatively higher tolerance to acephate in Stoneville bee population (USA) than populations elsewhere, although in general the population is still very sensitive to the organophosphate. In addition to killing 50% of the treated bees acephate (6.97 mg/L) inhibited 79.9%, 20.4%, and 29.4% of esterase, Glutathione S-transferase (GST), and acetylcholinesterase (AChE) activities, respectively, in survivors after feeding treatment for 48 h. However, P450 activity was elevated 20% in bees exposed to acephate for 48 h. Even though feeding on sublethal acephate did not kill honey bees directly, chronic toxicity to honey bee was noticeable in body weight loss and esterase suppression, and its potential risk of synergistic interactions with other formulated pesticides should not be ignored (Yao et al., 2018)."

"Mao et al. (2013) determined that constituents found in honey, including p-coumaric acid, pinocembrin, and pinobanksin 5-methyl ether, specifically induce detoxification genes. These inducers are primarily found not in nectar but in pollen in the case of p-coumaric acid (a monomer of sporopollenin, the principal constituent of pollen cell walls) and propolis, a resinous material gathered and processed by bees to line wax cells. RNA-seq analysis (massively parallel RNA sequencing) revealed that p-coumaric acid specifically up-regulates all classes of detoxification genes as well as select antimicrobial peptide genes. This up-regulation has functional significance in that that adding p-coumaric acid to a diet of sucrose increases midgut metabolism of coumaphos, a widely used in-hive acaricide, by ~60%. As a major component of pollen grains, p-coumaric acid is ubiquitous in the natural diet of honey bees and may function as a nutraceutical (a foodstuff that provides health benefits in addition to its basic nutritional value) regulating immune and detoxification processes. The widespread apicultural use of honey substitutes, including high-fructose corn syrup, may thus compromise the ability of honey bees to cope with pesticides and pathogens and contribute to colony losses." BC

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## The Auburn Series

## **Optimizing Oxalic Acid Through Collaborative Brood Monitoring**

**Rogan Tokach** 

Late in November of 2021, my advisor, Dr. Geoff Williams, peeked inside a couple of honey bee colonies at the Auburn University Bee Lab in Alabama after a cold snap earlier that month. Inside, he found almost zero capped brood; however, later in December and early in January, times when beekeepers in the area traditionally say they experience a brood break, Dr. Williams consistently found several patches of capped brood per colony. Auburn is in east-central Alabama, an area that experiences mild Winters allowing for brood to be produced nearly yearround, so this finding began to raise some questions. First, do beekeepers near Auburn experience a brood break? If so, what is the duration, and at what time does that brood break traditionally occur? Additionally, if things vary in Auburn, how consistent are brood breaks around the country?

Brood breaks are periods of time when there are no developing larvae or pupae in the colony. This traditionally occurs when the queen reduces or ceases her egg-laying, usually induced by the onset of cold weather and Winter. Customarily, colonies in areas with colder climates experience longer, more complete brood breaks than those in warmer climates, but the extent and calendar consistency of these brood breaks has never been measured. The accuracy of predicting a brood break can have significant impacts on beekeeping management practices, especially when Varroa destructor IPM programs often rely on these brood breaks to determine when to effectively use certain treatments like oxalic acid.

It is likely not surprising to you that most surveys report *Varroa* mites as a primary cause of colony losses in the U.S. Amplifying the issue are increased reports of *Varroa* mites becoming resistant to amitraz, the most used acaracide against *Varroa*. While beekeepers understand the importance of reducing reliance on chemicals and alternating modes of action for *Varroa* treatments due to

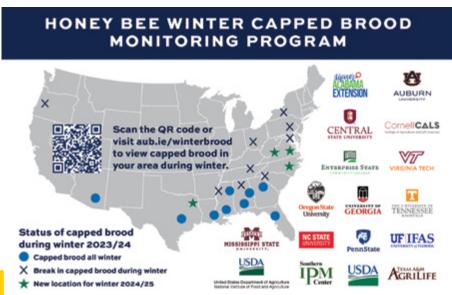


Figure 1. Winter Capped Brood Monitoring Program network for 2024/25.

resistance pressures, amitraz has remained a favorite for beekeepers because of its effectiveness when brood is present in the colony due to its extended-release nature. Conversely, treatments like oxalic acid are much more brood sensitive. Oxalic acid has historically shown great efficacy and ability to kill *Varroa* mites in the dispersal phase on adult honey bees, but it has proven incapable of killing mites in cells when they are protected by brood cell cappings. This largely limits its effectiveness when used in areas with brood most periods of the year. Since treatment regimens of multiple applications have proven to be incapable of reducing *Varroa* levels if brood is present, to truly optimize oxalic acid, treatments of vapor or dribble should be conducted in periods of low, or preferably no, capped brood. This increases the importance of identifying and predicting the timing and duration of natural brood breaks to provide beekeepers with an ideal time to treat with oxalic acid.

The Auburn University Bee Lab – along with the support of researchers at 12 land-grant universities, one state community college, and five USDA-ARS units, plus one state Extension system and four trusted beekeepers (all acknowledged at the end of the article) - is working on identifying the duration and/or presence of brood breaks in different regions across the country (Figure 1). To complete this, collaborators are asked to inspect a subset of colonies every two weeks from mid-October until mid-February (or until they have capped brood again). During inspections, capped brood area is assessed to determine cumulative amount in the colony. Results from inspections are then summarized and shared with beekeepers typically within one week, thereby providing beekeepers with up-to-date information on when colonies in their area are at a low capped brood point and primed for an oxalic acid treatment. Static maps, produced by Dr. Stephanie Rogers from Auburn's GeoIDEA Lab, that summarize results are posted on social media accounts and the Auburn University Winter Capped Brood Monitoring webpage (https://aub.ie/winterbrood) (Figure 2). Meanwhile, Dr. Rogers' dynamic maps are updated to allow beekeepers to compare capped brood areas across time and region (https://aub.ie/winterbroodmap). This is the third year of participation for some collaborators; as such, beekeepers can compare capped brood levels from similar time points during the Winters of 2022-23 and 2023-24. This provides an interesting opportunity to see how capped brood levels change at various time points according to year and region.



Figure 2. An example static map from 21 November 2024. Dot size represents location and corresponds to amount of capped brood area per colony, while an "X" means no capped brood was present in that location at the time of inspection.

To further these efforts aimed at mitigating Varroa pressures, a Varroa IPM working group has also been created targeting sustainable Varroa mite management practices for beekeepers. This group and these efforts are being supported by the Southern IPM Center, USDA NIFA, and USDA ARS. Future plans for this group and project include using the data gathered to create a model capable of predicting brood break occurrence and duration by using factors like location and weather. This model would be continually updated to provide beekeepers with predictions on optimal times for oxalic acid treatments; it may also be useful to better understand areas that might be impacted by Tropilaelaps mites, since we know that mite relies (possibly exclusively) on presence of brood to persist. Additionally, over the past two Winters, temperature sensors have been placed in the brood nests of a select number of Auburn colonies. These sensors take temperature readings at regular time intervals. Correlating temperature with capped brood area from inspections might be a way to deploy technology to help us determine presence of capped brood in colonies without the need for visual inspections by removing frames. If you are wondering, no collaborators

have seen an obvious negative effect of opening hives during Winter for this work, even when colonies are inspected in areas like New York (Cornell University) and Pennsylvania (Penn State University). Our checks were done every 2 weeks and were swiftly achieved. One could argue that strategic inspections of a few colonies, even in the dead of Winter, likely have more benefits than drawbacks. Overall, Auburn University and our tremendous collaborators are consistently working to improve *Varroa* IPM strategies and mitigate colony losses through projects like this. To follow along with our results from this year's brood monitoring, please visit the our Winter Capped Brood Monitoring webpage (https://aub.ie/winterbrood). And, if you have used our maps to made treatment decisions, please let us know at the webpage too! This feedback is important to us!

The 2024/25 Winter Capped Brood Monitoring Program is brought to you by: The Alabama Extension Beekeeping Team (Allyson Shabel, with special support from beekeeper Bill Elliot), the Auburn University Bee Lab (Dr. Geoff Williams, with special support from Rogan Tokach), the Auburn University GeoIDEA Lab (Dr. Stephanie Rogers), Central State University (Dr. Hongmei Li-Byarlay, with Daniell Kroh), Cornell University (Dr. Scott McArt, with special support from Emily O'Neil), Enterprise State Community College (Ed Howard and Ashley Snellgrove), University of Florida (Dr. Cameron Jack, with Chris Oster), University of Georgia (Dr. Lewis Bartlett, with Jack Garrison), Mississippi State University (Dr. Esmaeil Amiri, with Omar Martinez and Dr. Priya Chakrabarti Basu, with Audrey Sheridan), North Carolina State University (Dr. David Tarpy, with Kim Guillemette), Oregon State University (Dr. Ramesh Sagili, with special support from Carolyn Breece), Penn State University (Dr. Robyn Underwood, with Cassandra Darnell), University of Tennessee (Dr. Jennifer Tsuruda), Texas A&M University (Dr. Juliana Rangel and Dr. Garett Slater, with Heather McBride), USDA ARS Baton Rouge (Dr. Frank Rinkevich), USDA ARS Beltsville (Dr. Steven Cook, with special support from Dr. Josephine Johnson), USDA ARS Poplarville (Dr. Mike Goblirsch), USDA ARS Stoneville (Dr. Pierre Lau), USDA ARS Tucson (Dr. William Meikle, with special support from Milagra Weiss), Virginia Tech University (Dr. James Wilson), and beekeepers Kristine Smith and Mark Sweatman. Additionally, a team of amazing Auburn students and technicians have supported this project collecting, processing and summarizing these data.

# Border Status

**Charles Linder** 

The border with Canada has been closed to U.S. packages since 1987 due to the threat from tracheal and *varroa* mites. During this time Canadians have been importing bees from many other sources; Australia, New Zealand, Chile, Italy and most recently a plan to import from war-torn Ukraine.

In the last two years we have come to understand that for two really good reasons we need to work on resolving this issue. The first is of course the potential income generated for our beekeeping industry. Package sales to Canada could provide an influx of 9-12 million dollars to a troubled beekeeping industry.

The second reason is one that hits us all very directly. Most of the readers here are well aware of the new mite *Tropilaelaps* that is following the footsteps of both *Varroa* Jacobsoni and Destructor at an even faster pace, with more devastation. Many areas that contain *Tropi* mites are extremely close to areas that Canada is currently importing bees from. Most of us see this as a huge risk, both our bee industry and our food security.

As an example, Australia has been providing Canada with a pest called the bee louse for several years now. This parasite looks a lot like a *Tropi* mite to the naked eye, and so far, bee lice has not been stopped, CFIA does not even recognize the bee louse as a pest.

As a result of pressure from both sides of the border, CFIA (Canadian Food Inspection Agency) agreed in mid-Summer of 2023 to open a new risk assessment. In due course, documentation from our side in the form of both scientific supports and common sense reason was provided to CFIA on behalf of the U.S. beekeepers. All the known risk were addressed, as well as the new risk from *Tropi* mites.

In November of 2024 CFIA finally released its risk assessment on importing bees from the United States. The risk cited are as follows:

Africanized honey bees (AHB)
Small hive beetles (SHB)
Amitraz resistant varroa (rVAR)
OTC resistant American foulbrood (rAFB)

All of these were listed as "moderate" risk. In order to ship packages into Canada, these risks must have a mitigation process that lowers the risk to "minimal". In the 2013 risk assessment no known mitigations were available for numbers 3 of the 4.

The first one, **AHB** is actually pretty easy to mitigate. We have had what are referred to as the "queen protocols" in place for over 20 years now. Which means that we have 20 years of evidence that they do work.

The second one, **SHB** is a bit tricker, but as we dig into the math/assumptions that CFIA used to run its calculations we see an opening. CFIA used data points from Summer hives in ND, NY and (ironically enough) Australia. They come up with a number of 92% of the

hives contain beetles. Packages really come mostly from two areas in the U.S. One of those areas, the central valley of CA, is almost completely free of beetles. We will propose a correction to these numbers that should lower us under the threshold required.

The third and fourth ones, **rVAR & rAFB** while we disagree a bit with the number. The main sticking point is that these are currently as prevalent in Canada as it is here in the U.S. Our researchers will be working hard to prove this point.

How do CFIA and Canadian beekeepers think? Why such a hurdle?

The CFIA assessment is based on zero presence of any of the risk already in the country. For example, rAFB, they already have, so logic to us as beekeepers says it is already prevalent! For us on the outside we think if you already have a problem then there is no risk of importing it.

CFIA logic is different. Their logic is why import more we have to battle? Basically, a zero-sum logic. If we have 10,000 cases why import 500 more? That is a risk to them.

It is frustrating to Canadian beekeepers facing huge losses who would gladly take a small risk as opposed to going broke, but the right course of action to the provincial apiculturist who sees an additional case.

Canadian people also are important to this discussion. Your average Canadian beekeeper is quite terrified of the thought of Africanized bees and SHB. Between the media and a few funding seeking researchers there is quite a bit of misconception. This is the main reason only 3 of the 10 provinces are in favor of opening it.

Let us get to the last significant detail, *Tropi* mites. While we here at our desks can take a look at the historical movement of *varroa*, and the current trend of *Tropi*, and see the freight train quite clearly. Canadian Citizens and CFIA do not see it that way. Just last year while I was at the Alberta Beekeepers meeting, I had one of the provincial apiculturists tell me flat out, "Tropi is not a problem for us, with 6 months of Winter it won't hurt us".

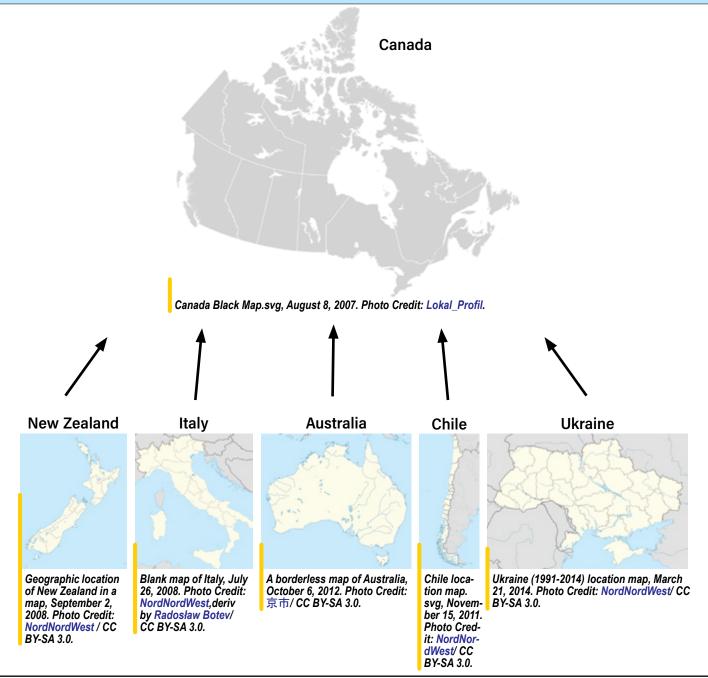
So, if an exporting country says "we don't have it" that is all it takes as long as a government official says no problem, there is none.

The trick now is timing. As mentioned, CFIA just released this assessment November  $9^{\rm th}$ , with a 60-day comment period allowed. While I suspect we can provide the documentation required by then (I am writing this Dec 11th). The reality of the timing is such that packages to Canada for the 2025 calendar year are pretty unlikely.

To that end we are evaluating and starting trade discussions. It is our opinion they are in violation of WTO trade rules by applying different standards for the U.S. than they do from their current suppliers. As it stands now the other countries involved are not subject to any of these standards.

More updates to follow, stay tuned. 🗠

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## BOBBING FOR PIRANHA







Tropilaelaps on bee larvae. Photo Credit: Maggie Gill.

Rattus rattus, August 16, 2009. Photo Credit: H. Zell. / CC BY-SA 3.0.

In recent editions, I've been vocal – alarmed – distressed by the Tropigeddon calamity. I've tubthumped the subject, loud and long. I hope I'm wrong; very wrong.

The top-line in early December was the annual colony loss report – for the first time, colony mortality in America exceeded 50% annually. 50% of the national bee-herd died. In the words of Ron Spears, 'That mess follows you the entire year'.

According to the January 31, 2024 National Ag Statistics Service, there are about 87 million head of cattle in America. What if there were 43.5 million head of cattle on January 31, 2025? According to the Food and Agriculture Organization, February 20, 2024 – there are 34.4 billion chickens on earth; 9.22 billion of those chickens are in America. What if on February 20, 2025, there were 17 billion chicken on earth; 4.61 billion chickens in America? What if half of American swine perish in 2025?

Consider again the YouTube presentations from Dr. Sammy on *Tropilaelaps mercedesae*.

For commercial beekeepers, no; *all* beekeepers – consider the possibilities.

Ever felt a soon-to-be-forgotten phrase of 'overcrowding'? Overcrowding is what your invasive species beekeeper neighbor practices against you. Tropigeddon is the answer. In North Dakota, where we host nearly 35% of the entire national herd – annually; that number will drop from most of a million colonies – to less than half a million colonies. Those colonies will be radically different colonies of bees than we've kept in the past.

Let's spend a minute talking about those colonies. In America, we run massive colonies of bees: pollinating a lot of crops, producing a lot of honey - with massive brood chambers. The ultimate Tropi play pen. Colonies of bees, and the keepers of those bees are in for a wrenching adjustment. Watch the films. In Tropi areas of the world - the colony of bees is a single deep. Frames of honey are harvested, one frame at a time, throughout the season. In Dorsata colonies - the colony absconds. Boom! Your colony is suddenly gone. It's an effective way for the Dorsata colony to shed the parasite load. And that works in tropical and near tropical zones on earth. Just move on; build a new colony; the landscape is in bloom, it rains often, foraging is a near year-round activity. From my N.D. window, today; I observe no foraging - we're headed for below zero in a couple days.

Most N.D. bees are now in Texas, or Mississippi, or Florida; or California – or in an indoor storage building. In Florida, *Tropi* will scour out brood-

ing colonies like Asian Citrus Psyllid cored out the citrus industry. North American beekeepers are the most mobile migratory beekeeping industry on earth. When that first positive is discovered in the Okanagan – *Tropi* will hitch-hike on scattering, panicked beekeepers hauling *only a few Tropis* to Saskatchewan – which will then scatter further to Nova Scotia and across into Maine, thence to Florida and back to California in one calendar year.

The indoor storage operators do have their finger on the pulse of hive health conditions; and I wish they were an organized group – but most indoor building operators are beekeepers and beekeepers don't share information. But I can tell you this that 50% hive mortality? It **directly** impacts the occupancy rate of indoor storage buildings. In December 2024 there is a lot of open space in storage buildings.

We have a lot to study about indoor storage. If you come with me to the building in Gackle, North Dakota – today; now – in mid-December we are closing in on the shortest days of the year. 95% of the colonies are completely brood free. 5% rear a hand-sized patch of brood.

It's cold. Zero colony stimulation
– a deeply restful state. To complete
a one-week complete brood free condition – which is necessary to kill the





MAERSK MC KINNEY MÖLLER & MARSEILLE MAERSK, September 6, 2019. Photo Credit kees torn / CC BY-SA 2.0.



European honey bee adult worker, August 1, 2022. Photo Credit: Database Center for Life Science (DBCLS). / CC BY 4.0.

No sign red and black set, Designed by Freepik. Photo Credit: @juicy\_fish.

very last *Tropi* in your indoor building of 40,000 colonies – it is necessary to become completely brood free. Completely brood free.

Costs to operate honey producing colonies will explode. Harvesting honey will occur in pickups – not on ten wheelers. Those 100-barrel a day extracting plants & equipment – poof. Relics. *Tropi* controls will mandate twice a month treatment. Current treatments will not achieve control. 50% colony mortality will be a mistyeyed memory.

Had enough?

Consider: The more we know about how *Tropi* survives in the absence of colonies – the better chance we have of preventing *Tropi* survival in the absence of colonies. This requires a different approach. Take the fight to *Tropi*. Specifically, go to the ports of Thailand. Go to the

docks where 'high rat associated' cargoes are loaded. (Do peruse any of hundreds of rat associated YouTube postings.) Scientists first discovered *Tropilaelaps* mites on rats in the middle of the last century. Hire a few Thai folks to find, rats. Sample the external rat. Swish, swirl, plate and look for the absence or presence of *Tropi*. This won't cost a lot. Or.... why don't we check at our U.S. Ports? There are rats everywhere. Only about 5% of ships at port at Long Beach are inspected at all for anything.

The *Proof of Concept* might arouse agencies to more correctly prioritize detection and exclusion. The beekeeping industry will probably have to fund this ourselves. It's simply beekeeping guerilla ground tactics as perhaps best practiced by Randy Oliver. There is less time than we think.

Consider: Adopt a species of honey bee better adapted to that parasitic stew of Southeast Asia bee species. Beekeeping, as it has existed in North America for over 400 years is about to change. Beekeeping, as it has existed globally, for millennia, is about to change. All that organic honey from Brazil? – is about to change.

Consider: As previously stated, focus white-hot energy on a genetic solution. As computational capacity expands – an answer, a solution not involving brute force organic acids – a solution not involving >50% annual colony losses – a solution focused on securing the food supply for our grandchildren – a solution focused on the future; not the potential calamity – is worth a few donated dollars.

**john@millerhoneyfarms.com** I love hearing from readers.









## What Vets Do For Fun in the Winter

**Dr. Tracy Farone** 



As you read this it's somewhere in the doldrums of Winter, February. A time when you have started missing your busy bee yard work, forgetting how crazy Spring turnover can be. Whether February is a time when you celebrate love or wish to shoot a certain groundhog, you probably have some time on your hands (unless you are in the almond orchards). So, it is a good time to catch up on reading and perhaps learn something new. This month, I thought I would try something different and slightly higher tech...a bit of a Valentine's gift to you. I am sharing a 3-hour online teaching session that I provided for veterinarians continuing education (CE) a few years back. The topics are basic beekeeping and honey bee diseases. Practicing veterinarians are required, in most states, to complete about 30 hours of CE to renew their medical license. Honey bee medicine has been a hot topic for CE the last few years! The video is a small glimpse into what we are trying to teach veterinarians about honey bee medicine. (Please forgive me if I do not

deliver any new information which may have arrived in the last couple of years, as this was a 2020 recording.) The video should also be a good study for newish beekeepers.

So, if you are game, grab a cup of coffee and take a listen. You can pause, fast forward, or stop whenever you like. If readers like this type of video sharing, I can also incorporate more how-to videos in the future articles. I would appreciate your feedback. One hint for this video: Skip ahead to minute 5-6 to get past the intros. Utilize the QR code, welcome to the classroom, and enjoy!

Scan the QR Code to Watch Dr. Tracy Farone's Online Teaching Session:



Watch Video Here!

https://www.beeculture.com/whatvets-do-for-fun-in-the-winter/





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## Learning From Neil Specht, Successful Canadian Beekeeper



**Neil Specht & Jerry Hayes** 

I have known successful commercial Canadian Beekeeper Neil Specht, since we were both young and good looking. Neil has always impressed me with his openness to learn, discuss and disagree nicely in order to get to a logical and meaningful answer. I was honored to be able to speak at the Saskatchewan Beekeepers Development Commission (SBDC) Conf. where I saw Neil. It was an outstanding meeting, well organized and a most important valuable sharing with little fluff except maybe my talks. I asked Neil if he would tell Bee Culture readers about his journey in beekeeping. At first he said probably not, but he came around and I think you will enjoy and learn from Neil's experiences and his sense of humor as he struggled and learned.

The SBDC has a funny award that they give to smart, successful leaders in the beekeeping world called the "BS" of the Year Scoop Shovel Award. It isn't meant to be offensive just a humorous recognition from colleagues and friends to someone in the Beekeeping Industry.

Jerry



Neil (Left), Elemir (Right).

It was my honour to pass the "BS"er of the Year Scoop Shovel Award on to a deserving, Dr Elemir Simko, at the Saskatchewan AGM meeting where Jerry Hayes was a guest speaker. I teased Jerry that he was lucky to be from out of the country or he could be a recipient, that would require him to return and to pass it on. Where upon he asked if I would write something for *Bee Culture* from my vast knowledge of beekeeping.

BS? (Bee Stuff \(\cup \))

He suggested my growth in beekeeping. (read mistakes and struggles) I'll call it the value proposition.

At an early age, I got to watch a National Film Board movie in grade school. I'm thinking I was 10 or 11. It was about the discovery of bee language by Dr. Karl von Frisch. I knew then that I would have honey bees in my life to watch them speak to each other. To see how they make group decisions to successfully survive.

Let's start with the economics. What does one hive cost today? Probably the same then, but how quick can you pay for it? With inflation in those days it took me about a year to pay for the equipment and a little bit more for the bees. I was told that for many reasons you should always start with two colonies. Then the worst thing that could happen, did happen. I had a good crop. Christmas honey presents for all.

The extracting was a mess but we made honey in a volume that allowed for more, so, I doubled the colony numbers each year for the next 5 years to 64.



Growth necessitates business bottle necks and then the lessons learned so you don't do it again. 
We were lucky though to have growth to this point.

Family labor was stretched. Storage was a huge problem. Family time was getting scarce. Honey in the barrel marketing was needed to complete lower bulk prices.

By the way, at this point, I was God's gift to beekeeping and knew everything there was to know.

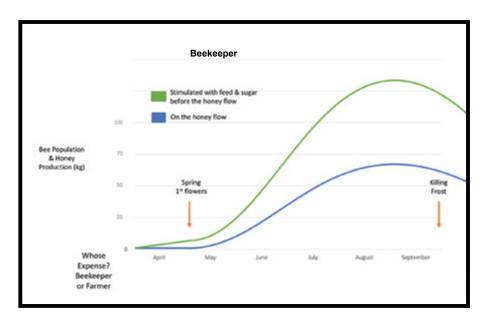
I of course bought the dedicated 1 ton truck I was going to need. Extractor, pump and bulk tank.

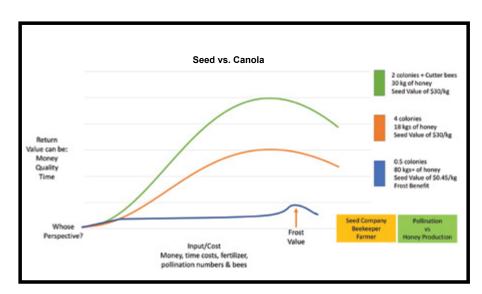
We moved extracting into the family two-car garage. Also plumbed in water, rewired electric and was ready to go. That year was a 10 pound honey crop with bees starving and robbing each other to death. Those were the early days of tracheal mites. Winter losses were significant too. The big lesson I learned was when you are absolutely sure you know it all, watch out, you fool! The love of my wife, my grain farm and hobby beekeeping were sorely tested. Lesson... many don't survive. Much of our \$'s were going to the sidelines.

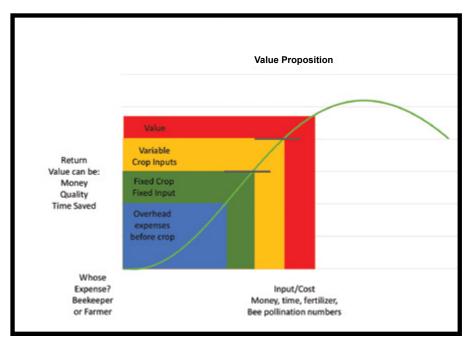
I survived and grew back more slowly. I should say, we, but at this point my wife, Janine saw my beekeeping hobby as a waste of time and money. I had always put my profits back in. Now all the extra money was tied up. The other lesson would be that your hobby/ passions have a cost. Maybe not money but time and space. The family had no Summer holidays. Please value your family time, and your car garage.

The growth through to a sideline outfit of 300 plus was a lot slower than we had thought. Time was getting to be more of a problem that required an extra farmhand. We had inherited the family dry land grain farm early in our marriage in 1976. The farm was struggling through the 1980's double digit interest rates.

About this time, Janine was giving me grief about how we had to pay a hired worker and I got to clean up to go "work the bees" while she got to go drive a dusty old tractor... and about all the money and time wasted on bees. Real unhappiness. We were poor (snake belly poor... so poor, we didn't have







a pit to hiss in) It was at that time I got to point out that the bee sideline had made \$16,000 and the farm had made nothing. Right then Janine became a "BEE LIEVER"

Then WE embraced other ways of getting a little more \$ out of each hive. Pollination, any one? Loading a one ton by hand is nothing like unloading. You see, they crawl and follow you into the truck for the fun ride home. But for just few extra dollars value your partner. You can't lift them yourself.

The next big growth is the dedicated building to get past the dividing line of 300 colonies to the magic 500 colonies number. This commitment eats up many side-liners wanting to move to commercial operations. The added un-earning negative \$ overhead expense requires extra attention and endurance.

We were lucky at this point as we had been doing small acreages of

pollination to get that extra income.

At this time I was asked to pollinate a garden size plot, a proof of concept trial of the first Liberty Link Canola, for Dr. Tom Schuler. He needed 2 hives, 100 miles from my closest bees. Ohh no, no, that's not profitable. But we would help because he was stuck. Then the next exciting endurance thing happened.

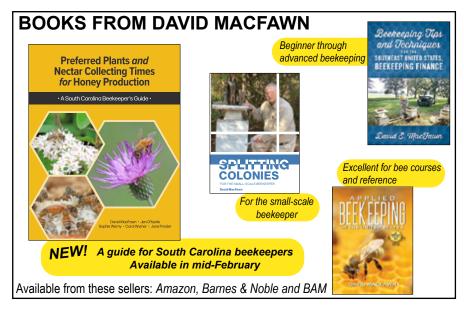
He was so happy that over the next year or so he asked if he could contract for 1000 colonies? Well, we could grow bees even if the crops were sketchy. So if he would contract with us for three years we could go borrow and grow. This became an evergreen contract for two years in the future. The banks loved it. That paid for bees and buildings, trucks and men. Oh, did I mention forklifts? Value your back?. Over the next years we grew to be the largest pollination company in Saskatchewan with 3000 and then to 5500 at our largest.

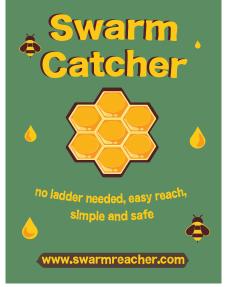
Remember the bank? We had wrecks like the high Winter losses associated with *Varroa* and control resistance. That ever-green contract needed many bees. Luckily the bank was ready to help again. We rolled the dice and went back in up to our necks. That brings out the value of doing cash flow projections, speaking points, for that visit to the creditors. And your wife.

OK the charts (see charts on previous page).

Pollination contract value is used for speaking to farm managers? The value proposition. We are downsizing now, because we value our retirement time more now. Un the end, you should know, I think Jerry would appreciate a shovel with his name on it. I hope I have helped, from Canada.

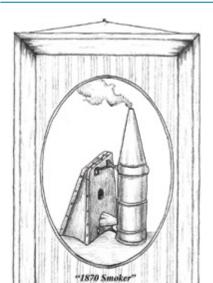
Neil Specht is the recipient of the Alberta Beekeeper of the Year Award! Congratulations Neil. Well Deserved







# FIRST TIMES



#### **Lighting Your Smoker**

There is an easy and safer way to light a smoker. The materials you need are as follows: the smoker, of course, a half sheet of newspaper, some cypress mulch purchased from a nursery (make sure it is cypress and not cedar mulch), some untreated wood chips cut into one-inch by one-inch squares, and matches, or a fire stick.

- 1. Take the half sheet of newspaper and loosely ball it up. Place it at the bottom of your smoker and light it from the bottom.
- 2.Add some cypress mulch and on top of the burning paper. Work the bellows slowly and add in more cypress mulch, all the while slowly working the bellows. Add a couple of wood chips. As the mulch begins to burn well, increase the bellow speed. Continue to add mulch and wood chips until the pot is full.
- 3. Tap the smoker on the ground to allow the mulch and wood chips to settle. Then, fill the pot to the top again. When flames rise out of the top with each bellow squeeze take your hive tool and push the burning material down some more. (Do not squeeze the bellows when adding the material to the pot. If you do, the flame will burn your hand.) Fill the extra space with more wood chips.

4. Close the top of the pot and work on the bellows until you are satisfied with the amount of smoke coming out. The wood chips act like coals and will keep the smoker burning longer. If you have several hives to work, you may need to add more fuel as you go along.

This preparation method will give you enough smoke to last for a good while. When you are finished with the smoker, roll up a small piece of newspaper and use it to plug the smoker hole only on the top. The flames will extinguish, and you'll have a few good coals inside the smoker for the next time you need it. To relight the smoker, simply empty the coals out and place a fresh piece of newspaper at the bottom of the pot. Add the old coals back in, followed by new mulch and wood chips as you did before. The old coals will light more quickly, speeding the lighting process.

Smokers can be very dangerous, so you need to use them carefully. Always remember to place a hot smoker on a non-combustible surface. There have been a few times when I was working in my bee yard and the grass was so dry from the Summer heat that my smoker caught the grass on fire. It is safer to place your smoker on a piece of metal instead of on the dry ground. There have been cases where a beekeeper has burned his entire bee yard, including the hives. Always be careful where you put a hot smoker.

From the day I picked up my first two hives, back in 1964, I have been asked questions about honey bees. Some questions were asked by folks who were just curious about bees and other questions were asked by folks who had an interest in getting into beekeeping themselves. Even my scout master couldn't resist asking me questions about beekeeping. When I was taking my beekeeping Merit badge exam, (which unfortunately the Boy Scouts don't offer any longer) my scout master was so fascinated about all the beekeeping equipment and my presentation that he got into beekeeping himself.

#### **Dennis Brown**

In the 1970's I spent a couple years in Wurzburg, Germany helping/learning their way of beekeeping/ AI. It was an invaluable experience that broadened my beekeeping knowledge. In the 1980's I decided to expand my apiary to 250+ hives. When the mites/beetles infestation arrived, I took a huge hit on my colony numbers. It was then I decided to start my "Survival of the fittest" program. Up to that point (and since) I had never polluted any of my hives with pesticide and in no way was I intending to start.

It took several years to develop my own hygienic bees. My hive numbers rose back to my 250+ mark. It was a tremendous amount of work but in no way would I put bees/pesticide together. My children loved the Yaupon and Tallow honey we produced, and I didn't want them to eat one drop of tainted honey. That was the driving force to stay "chemical free."

For those who want to learn more about beekeeping, I've written two books on the subject.

herculesinspections@yahoo.com https://www.youtube.com/ watch?v=aodXkKxe7vg

Author "Beekeeping: A Personal Journey" https://www.amazon.com/dp/1461055512?...

Author "Beekeeping: Questions and Answers" https://www.amazon.com/Beekeeping-Que...

It's been a wonderful life being surrounded by my bees but like everything else, because of my age, my time had come, to hang up my hive tool. I keep a few hives to enjoy but my main goal is to share the knowledge I've gained over my lifetime working with the bees.

"A day of work in the bee yard gives us the strength to bear the hectic parts of life in the real world." Enjoy your bees!

– Dennis Brown



Hello Friends,

Happy Valentine's Day!

Bee B. Queen

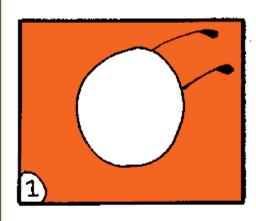
Send us the bee comic strips you created!

Bee B. Queen

Challenge

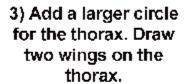






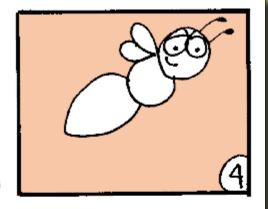
#### **HOW TO DRAW A** CARTOON BEE:

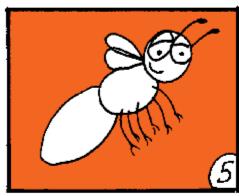
- 1) Draw a circle and add two antennae.
- 2) Draw two large circles for eyes. Add eyelids and a smile.

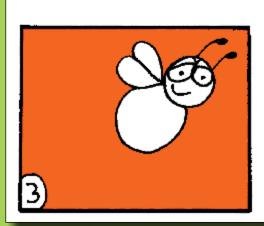


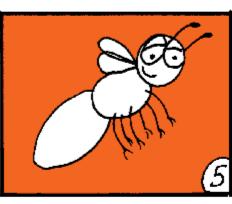
- 4)Add a third circle, slightly pointed at the bottom for the abdomen.
- 5) Add six legs coming from the thorax.
  - 6) Add stripes to the abdomen and color your bee black and yellow.

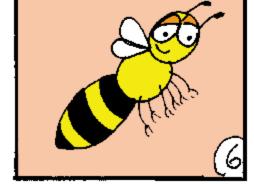
Created by John Martin











# oo Bee Bad's comer

#### **Bee Buddy**

Logan Scholink, age 6, lives in California with his parents, two dogs, an aquarium, and two backyard hives. Logan is an observer. He enjoys looking at the colors and stripes of honey bees while they fly from flower to flower. "Bees are very curious about flowers" states Logan. His dad appreciates Logan's help with the hives. It is quite an adventure to go along to catch swarms too. Of course a favorite part of keeping bees is chewing on the honeycomb while extracting the honey. Then the family gets to sit down to mom's delicious pancakes with honey. Logan has other interests as well. "I like dogs, plants, movies, sports, and transformers. My second favorite transformer is





#### **Bee Valentine**

You Will Need:

- Butterscotch candy
- Black permanent marker
- Googly eyes
- Glue
- Colored paper
- Tape

#### Directions:

- 1. Color stripes on the wrappers over the candy shape.
- 2. Glue on eyes.
- 3. Cut paper in a heart shape.
- 4. Glue the candy onto the heart.

Produced by Kim Lehman www.kimlehman.com www.beeculture.com

February 2025

#### Beecome a Bee Buddy

Send two self-addressed stamped envelopes and the following information to: Bee Buddies, PO Box 117, Smithville, TX 78957.

Name
Address
Age
Birthday Month
E-mail
(optional)

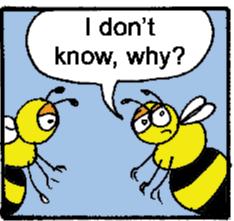
We will send you a membership card, a prize, and a birthday surprise!

Send all questions, photos, and artwork to: beebuddiesclub@gmail.com or mail to the above address.



Now you can make your bees into a little comic strip. Draw three small boxes and make your bees talk.







# Beekeeper Stories

## George Washington Carver

## How George Washington Carver Influenced the World

#### **Barbara Bloetscher**



George Washington Carver Portrait

George Washington Carver was an inventor, researcher and social engineer. He received tremendous accolades from the likes of Theodore Roosevelt, Albert Einstein, Franklin Roosevelt, Thomas Edison and many more. But George's life didn't start out in the 1860's like that.

George's life was not that unique after the Civil War; his parents were slaves. His mother, Mary, was purchased by Moses Carver in 1855. Moses Carver's house was a 14' x 14' one room "shanty", built by Moses with mud and rags stuffed in the gaps between the logs. Moses later built a slightly larger home for his family with central heating (fireplace) and room enough to eat and sleep on the floor. Mary and her children lived in the original "shanty" house with her children.

George didn't know exactly when he was born. No one paid attention to slave children in those days, but he was thought to have been born in July of 1865 or 1866. His father had died before he was born. When he was a few weeks old, George and his mother were kidnapped by slave raiders. Moses Carver offered one of his workers \$300 and a racehorse if he would find and return George and his mother. Mary was never found and was presumed to be dead, but George was brought back and "adopted" by Moses and his wife Susan. He became George Carver. They also adopted George's older brother, Jim.

Perhaps from cold drafts in a rural home, George was seriously ill as a baby. With no access to doctors or medicine, Mrs. Carver gave him homemade tinctures which apparently did not cure him. Historians suspect that he had bronchitis which caused permanent damage to his lungs. As a result, George was often sick and susceptible to influenza and other maladies. He suffered from recurrent illnesses all his life.

Moses knew that George was special, if not a little "odd". He spent every day in the woods, enthralled with birds, plants, insects, mushrooms and any natural thing. He often talked to plants and was always bringing back treasures which he kept in a "secret garden" at the edge of the woods. He transplanted wildflowers and spread seeds from other plants too big to dig up and was heartbroken if he smashed a plant. His fascination grew with age but one of his frustrations was that he didn't know what any of these amazing things were, as they had no books nor was there a library in their little town of Diamond Grove, Missouri.

At this time, Black children were not allowed to attend the white children's school, and nothing was offered for them in town. The closest school for them was 8 miles away in Neosho, Missouri. At the age of 10,

with no available transportation, he resolved to walk the hilly path to Neosho so that he could learn about these "amazing things that God created".

One day, hot, hungry and exhausted, he was found asleep in a barn owned by Mr. and Mrs. Watkins, near the Black school. Mr. and Mrs. Watkins liked George's humble, courteous personality and allowed him to stay with them while he attended school. However unlike Moses and Susan who accepted him as their own, this couple expected him to work and pay for his books and materials as they had little to share. George had learned how to clean and iron clothes at "home" and now used his skills to make money. He also helped the Watkins with their chores and attended school as much as possible. Soon, he realized that the local teachers could not advance his education, so he headed for Fort Scott, Kansas for higher education. He was about 13 years old then.

Like many people at that time, he would work long enough to pay for several weeks of school, then had to work several more months until he had funds for tuition and books to continue. He did odd jobs to help pay for school and drew detailed replicas of plants, mushrooms, insects, feathers, and other natural creations that amazed him. He also loved to paint. Some of them he sold to pay for school. It was a scary time for Black people, especially in the south. In March 1879, George witnessed a man wrongly accused of winking at a white woman and was beaten savagely then hanged and burned. He remembered that his entire life. He left that night for Olathe, Kansas where he met Lucy and Christopher Seymour, a white couple who befriended him.

In the Summer of 1880, he and





George Washington Carver teaching chemistry

George Washington Carver at his desk

the Seymours moved to Minneapolis, Kansas where he attended night school with white students and was able to complete grades 8, 9 and 10. The Seymours, who became lifelong friends with George encouraged him to apply for a degree at Highland College, in Kansas, and although accepted on paper, after spending all his money to travel there, he was denied because they said that they only accepted indigenous people. Disillusioned and broke, he ran a laundry business for a while, then moved to Ness County, Kansas in 1886, where he built a sod house and farmed, but sadly a severe drought continued for several years which killed crops in the area. He was known to carry buckets of water 5 miles to help his parched crops to no avail.

In 1888, he borrowed money and moved to Winterset, Iowa where he was a cook in a large hotel. Typical for him, he attended every church service he could and was heard singing in his high tenor voice. Mrs. Milholland loved his voice and invited him to their house. Soon Milholland's and he were fast friends. Impressed with his artistic skills and great attention to the natural world, Mr. and Mrs. Milholland urged him to apply to Simpson College in Indianola, Iowa. George walked 25 miles to apply in person, but this time the all-white college accepted him eagerly, thus in September 1890 he enrolled as an art major.

With no money for a dorm, George cut wood and sold paintings for money. Seeing that George was living in a barn, the administrator allowed him to stay in a tiny shack which had a dirt floor and no furniture. George dug into his studies and was active in YMCA, basketball, sang in the choir and participated in cultural events. He also played in student bands, as he could play 4 different instruments - the organ, guitar, violin and accordion. He won the hearts of the students and faculty to the point that the students brought him a table, chairs, a bed and other basic furniture. No matter where he went on his long journey, he befriended everyone. He was gracious and thankful for any crumb of assistance and showed that he was willing to work hard.

One of his many fans, Etta May Budd who was his art professor realized that George Carver would have a difficult road ahead with an art career, so she contacted her father J. L. Budd, a horticulture professor at Iowa State College of Agricultural and Mechanic Arts (now Iowa State University), in Ames, Iowa. Once again, he was the first Black student on campus, and although he struggled at first, he soon won the hearts of the students and many professors. He again was active in many social activities.

He was about 30 years old in 1894 when he obtained an undergraduate degree, then with the urging of the faculty, continued and was the first African American to earn a Master's Degree at Iowa State Univ. He was the groundskeeper and cared for the greenhouses, plus he taught freshman botany in addition to working on his projects. George did not "just" teach, he thoroughly engrossed himself in botany, biology, entomology, plant pathology and mycology. He took his students on field trips,

including the 6-year-old Henry A. Wallace, son of friend Henry C. Wallace who became the USDA Secretary of Agriculture.

Upon graduating, Iowa State begged him to stay and be a full-time faculty member. They offered him a fully equipped laboratory, a flattering salary and any help he needed to conduct his research. George was torn as he had developed strong friendships with many of the faculty, chairmen and the students; in fact, a group of "his children" (students who adopted him as their dad) bought him a suit which he wore the rest of his life, though worn, battered, and repeatedly mended. Other universities sought him too, but at that time in 1881, Booker T. Washington had established the "Tuskegee Normal School for Colored Teachers" (renamed Tuskegee University in 1985). thanks to the Morrill Act 1862 which appropriated land to public universities for agricultural education.

By 1896, he had established an agriculture school and wanted George Washington Carver to be Chairman. Washington begged Carver to come but had little to offer. They could not pay well and did not have equipment for a lab, but he promised Carver that they would "soon" have everything he needed. That day never arrived but regardless, in October 1896, Carver joined the faculty, believing that he was "following God's will to be of the greatest good for the greatest number of my people possible." Carver spent the rest of his life in a marvelous career improving the life of all people, animals and plants, and changing history.

Meanwhile, in 1872, Auburn University had become the first land-grant college in the south and was funded with an Experiment Station, but because it was an all-white school, George implored his friend Henry C. Wallace who was then the USDA Secretary of Agriculture to fund Tuskegee for an Experiment Station as well. Wallace respected George immensely and allocated Tuskegee as a land grant university with an Experiment Station, although the funding was about one tenth of Auburn's. George was appointed as Director and Consulting Chemist on the Tuskegee Experiment Station in

George W. Carver saw the plight of Black people in the south - they had no money and had lost their land trying to pay their debts. They were forced to work on other people's farms to earn a small percentage of the crops' sales. Because the war had ended which decreased the reliance on cotton, and because the soil had been depleted of nutrients from continuous cotton, growers were making very little and falling further and further behind. Carver was determined to help "his people" find ways to make money while restoring soil fertility. Before long he made compost bins and discovered the miracles of peanuts, cowpeas and sweet potatoes and the benefits of crop rotation. He learned that growing legumes (peanuts and cowpeas) added nutrients ("nutrients" and "protein" were not understood until the 1900's) to the soil and allowed natural microbes to improve the soil.

George Washington Carver in field holding soil



George Carver had already been testing plants from which to make other products using "cookstove chemistry". He developed hundreds of products from easily grown crops and local natural resources, including nutritious milk made from peanuts, flour from sweet potatoes, perfume from the lavender plant, simple crafts to sell or beautify the home, and house paints made from native clays. Dyes which were imported before the war were now expensively produced in other states. He used his knowledge of plants to produce pigments from 28 different plants.

At one point he oversaw the entire farm as well as teaching and conducting research. He learned that planting clover helped the soil and served as an excellent crop for honey bees. It was stated that Moses Carver kept bees for honey to sweeten food. Sugar was expensive so keeping bees not only provided a source of sugar but other products from the hive could be used or sold for extra income. He taught beekeeping at the Experiment Farm and was extremely successful growing the colonies, however it was difficult to convince farmers to rotate cotton with clover species.

Carver did not have enough hours in a day, especially since Booker T. did not provide any secretarial help nor equipment for the laboratory so George was forced to beg for chemicals and basic lab supplies from other private and public labs around Alabama. He discovered how to preserve pork by pickling it so that a farmer did not have to wait until Fall to harvest all the pigs.

Records have indicated that Mr. Booker T. Washington was jealous of George's quickly rising notoriety as he wanted the credit for "his" Tuskegee. Booker continued to advocate for Tuskegee to receive funding, yet the students were suffering from malnutrition and did not even have toothbrushes. It appeared from faculty and student notes that neither saw benefits from the money being gifted to the college. Yet George never complained and would send heartfelt letters of thanks for any help that Booker sent his way, even basic microscopy tools. In fact, decades later when friends from Iowa State University visited him, the only piece of equipment in the lab was the microscope that he gave him when he left for Tuskegee.

This was not the only frustra-

tion that George Carver endured. In traveling for speaking engagements, he was still forced to sleep in the last train car "for blacks" and was often denied entrance to hotels, public restrooms and restaurants, yet George pursued his endless ambitious goals. He made washes and paints out of Alabama clays so that even poor people could paint their homes and make them look prettier. An Episcopal church saved hundreds of dollars using his paint for the exterior of the building as even the cheapest paint was twice the cost of George's paint. Tuskegee used his paint (at no cost) to cover most of the buildings on campus, yet they refused to provide boards on which George could paint to provide samples. The paint, especially his royal blue, was loved by many and lasted on buildings over 40 years!

George saw that despite offering night classes and short courses, he was not able to reach those who were too poor to travel or were not able to leave the farm, so he decided to take his talks to the farmers. He packed up his samples of soaps, lotions, soil amendments and milk substitutes into a wagon and went to the poorest areas of the county. Morris Jessup, approving of his work, donated a wagon in 1906 which became known as The Jessup Wagon. Carver gave prizes for the best vegetable, the biggest hog and best garden. Between his teaching, managing the farm and conducting research, it soon became too time consuming for Carver to make these trips, so his former student Thomas Monroe Campbell was appointed, and continued to "extend" research to the public for decades and is recognized as being the First Extension Agent in the United States.

One of George Washington Carver's main interests was using peanuts as a substitute for more expensive foods or hard-to-find ingredients. He developed over 300 uses for peanuts including 30 dyes from the shells and over 45 recipes for meals. For dinner at Booker T. Washington's home, he created a 5-course meal with fifteen dishes made from peanuts. Even the menu was made from peanut shells. He also wrote a bulletin describing 40 ways of using cowpeas as a table delicacy.

After the death of Booker T. Washington in 1915, Carver was relieved of considerable aggravation



Thomas Moore Campbell on Jessup Wagon

and was able to accept invitations for more interviews, lectures and radio shows. He quickly rose to international fame. Recognition came first from his white peers in agricultural research. In 1916, he joined the advisory board of the National Agricultural Society and was named as "Fellow" of Great Britain's Royal Society for the Arts. He was also awarded the Spingarn Medal, the highest award bestowed by the National Association for the Advancement of Colored People (NAACP) in 1923.

By the 1920's George Carver had become a household name. He had created 325 uses for peanuts, 108 Products from sweet potatoes and 75 products made from pecans. He also developed a rubber substitute and over 500 dyes. Some of his products include cosmetics, fuel, lubricating oil, as well as 85 different kinds of food, beverages and medicines. Some examples include meat tenderizer, instant coffee, fudge, chop suey sauce, tutti frutti cheese, mayonnaise, mock chicken, peanut beverage flakes and peanut lemon punch.

He was traveling extensively for interviews and to speak at events. Foreign governments were asking for help with problems, as well as big companies. An oil company wanted to know how to use byproducts which presently were considered waste, John D. Rockefeller wanted his bulletin on soil reclamation, while dentists were asking for help with gum disease. George developed a peanut based cream that when rubbed on the gums halted tissue degradation. Ghana in Africa, was suffering starvation, so George sent them a recipe for peanut milk which was nutritious and cheap to make. He diagnosed plant diseases, identifying insects and recommending nutritious snacks. Indeed, he discovered a way to dehydrate fruits and vegetables for prolonged storage. He was the first to integrate plant ID, biology, entomology and plant pathology into diagnoses.

The public became more aware of Carver, however, after his testimony in the U.S. House of Representatives in 1921. The American Peanut Assoc had asked him to speak to

Congress, because he was the most likely person to convince them to install a tariff on overseas shipments of peanuts. This was a difficult trip for Mr. Carver, who had always been frail and thin. He packed two heavy suitcases full of samples and took the train to the Capitol. Naturally he had to ride in the last train car (which was usually dirty and unkempt) and was refused a pullman car (to sleep). He arrived in Washington, tired and dusty and walked to the hotel where the committee was meeting but was refused entrance. He then walked to a place where he could spend the night and returned to the hotel the next morning, still to be refused. Not willing to give up, he phoned his contact and asked him to please tell the Hotel to "allow" Mr. Carver to join the meeting, whereupon he was escorted up, with copious apologies.

Watching the presenters before him, he was dismayed with the curt and uninterested attitude of the committee members who only allowed 10 minutes per presentation. Finally, it was George's turn, who proudly opened his suitcases full



of bottles and boxes of samples. He educated the committee on the many uses of peanuts and how they can be substituted instead of the more expensive or imported ingredients. At the end of his 10 minutes, he started packing his samples only to be asked to keep going! Another 10 minutes then another 10 minutes and more passed, and they continued to urge him to continue. When he finished his presentation and started packing, he was asked to talk about his discoveries with sweet potatoes. One hour and 40 minutes later, he was enthusiastically applauded, in fact they gave him a standing ovation! The tariff was enacted, and George Washington Carver became known as "Mr. Peanut".

George continued his research with passion and developed an extensive collection of plants, fungi, seeds and flowers. His fungi collection was so elaborate that the Chief Mycologist for USDA was collaborating with him to obtain data. He was receiving hundreds of letters from doctors, businessmen and citizens asking for remedies for ailments, poor soil, uses for plant parts and personal advice. He answered all the letters until his hands could no longer work, at which point he had a friend type the letters (Tuskegee only allowed half time work sometimes). He wrote 44 bulletins and 7 leaflets and sent them worldwide as requested, yet Tuskegee refused to make copies.

One of Carver's many products he developed in the mid 1930's was peanut oil which he rubbed on patients affected by polio (then called infantile paralysis). He received patients every day non-stop until the last few months of his life, even though his hands were mostly useless by then. Because so many needed help, funding poured in to establish the George Carver Infantile Paralysis Center which is still in operation.

The Depression hit people hard as many lost their jobs and their homes. Carver wrote hundreds of letters a day and was featured on the radio and magazines and newspaper about using everyday items to make something better to sell, eat or improve their home life. George was good friends and regular correspondent with Theodore Roosevelt, Franklin D. Roosevelt, Albert Einstein and Henry Ford. Twice Mr. Einstein offered George a job working in a fully equipped lab with an extremely generous salary, yet George did not think he could "serve the people" as he did at Tuskegee. Henry Ford shared his ideas that waste was not acceptable - some use could be found for anything- and the concept of "Chemurgy" - to focus discoveries of science toward a practical end, especially in farming. They both shared the desire to help the common person, in fact Henry Ford founded multiple one room schools in poor areas and dedicated them to George W. Carver. When he built Greenfield Village in Dearborn, MI in 1933, he obtained Moses Carver's house to honor George's humble beginnings. He purchased much needed supplies for his lab and paid to have an elevator installed in George's dormitory room so that he could get up and down the stairs more easily. Ford funded the construction of the George Washington Carver Museum for all of George's plant and fungal collections, a replica of his 1896 lab, and his early tools and plant drawings. George had displayed 12 of his paintings, however they were destroyed in a fire after his death.

George was in his 70's in 1938, but still tried to work on the museum as often as he could, while still receiving 30 letters a day. He was given an honorary doctorate from Simpson College as well as 2 other prestigious colleges. The US Pharmacopeia printed his list of 115 plants

grown in the county with herbal and medicinal purposes which resulted in more letters. As he aged, he was suffering from heart failure, arthritis, diabetes, anemia, and frequent bouts of influenza.

The museum opened in 1941 and is still open today as part of the Tuskegee Institute National Historic Site. George returned weak and sick after a train trip to Dearborn in November 1929 to visit Henry Ford, where he was proclaimed to be "America's Greatest Scientist" by Mr. Ford, but after several months of bed rest, he became strong enough to return to his museum. In October of 1942, he suffered heart problems and was again bedridden. He died January 5, 1943. True to his personality, he left nearly \$60,000 to establish the George Washington Carver Foundation at Tuskegee, which continues to provide funding for Black researchers in Alabama. His birth place in Missouri was designated George Washington Carver National Monument. It is still administered today by the National Park Service.

We all need to recognize the intelligence, endurance and connection George Washington Carver has to us this day.

https://encyclopediaofalabama.org/ article/george-washington-carver/ https://blogs.ifas.ufl.edu/ orangeco/2020/07/29/the-rootsof-cooperative-extension/

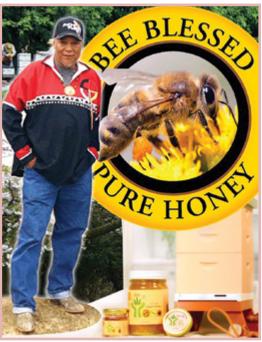
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# Berry Hines Sr.





Jerry...

So tell me about how did you discover honey bees, Berry?

#### Berry...

Growing up we were sharecroppers. My mom and dad separated and my mom went back home like most country girls do. But, she had seven children and I was the youngest. Anyway, I was raised by my grandfather. And my granddad did my daycare. Whatever had to get done on the farm, I was there with him. He had honey bees kept in what he called 'big gums' or hollow logs, you know the term, right? He was not a professional beekeeper, he was just trying to eat and live. So that was my first introduction as we gathered the honey from them.

#### Jerry...

So you've been doing this a long time and it's kind of fun to think that you were doing it with a family member, I think that's kind of cool actually.

#### Berry...

And my granddaddy sold honey that we took from those logs and back then he could get a nickel for a quart jar for the honey. I didn't know it was a quart, at the time. I use to put it out at the farm and people would come by and buy it. You know, that was my first experience. I would say I was probably around seven years old.

#### Jerry...

Wow. Wow. That is a great memory, I think that's kind of cool. And what state was this in, Berry?

#### Berry...

Northeast North Carolina. I do a lot of work in that area with farmers.

#### Jerry...

How many colonies do you have now?

#### Berry...

At my peak I was up around 800 colonies and I became a commercial crop pollinator after I retired from the military.

#### Jerry...

That's a lot! And what branch of the military where you in?

#### Berry...

I was in the Army.

#### Jerry...

Well, bless your heart and congratulations.

#### Berry...

I am older now so down to 300 colonies.

#### Jerry...

To do it right, that takes some time, Berry

#### Berry...

I have helpers and my grandson does a lot for me. When I got out of the military, I'd done a little bit of everything, but within a year after getting out and retired, I had a stroke. And while I was in the hospital, I wondered, what would help me? I

was healthiest I could remember and my happiest was on my granddad's farm, even though and I didn't like it then or the people. I hated the farm growing up. That's how I wound up in the military, even though the Vietnam War was going on. I wound up in Army Security, because I hated farming that much. Laying there in the hospital I was thinking about my future and my past. My thoughts had changed over the years and I remembered all the good things about farming with my granddad. I started out with a new idea of what part of farming do I want to do and then I remembered that the bees were the thing that I enjoyed most with times with my granddad. That was the best part. And so that's why I started out with basically two odds of beat, the stroke and becoming a better beekeeper. I knew nothing about leasing bees and stuff like that so I hired out with some guys that were commercial pollinators. They kind of taught me the ropes on commercial pollinating. That's where I learned. And it makes a big difference, I mean, to try to learn that on your own, but it's tough and especially commercial beekeeping.

#### Jerry...

Boy, I'm glad you had that opportunity.

#### Berry...

Well, my experience growing up, I guess we'll call it today hobby beekeepers people helped me but the best part was under the fact that I remembered a lot of the stuff my granddad taught me. I was thinking, he wasn't a beekeeper when we all now have to manage these honey bee diseases and things that were not there at the time. All that was not there. Nobody in my family, nobody, really knew what to do with honey bees. We were after the honey, because it was food. My granddad would have never believed that you could rent out honey bees and make money. So that was when I learned pretty quick and I started growing the

colonies and then I started working with some commercial guys and they heard me telling them I wanted to do this and they helped me out a lot. As my hive numbers grew, in the early days, to like maybe 70 hives, some of the commercial beekeepers small crop pollinator jobs, they would turn over to me. So that's where I really got into it and it took about 3 to 4 years before I was over a 100 colonies with my grandson. My grandson's mother passed, and so he became basically mine. And I started taking him with me that's where his history beekeeping knowledge come from.

#### Jerry...

How old are you?

#### Berry...

I'm 71. I don't worry about it. I enjoy myself every day because not only do I work, I've taken this cool circle of life. I work with the pollination, I help farmers. I don't want to say to these farmers how to farm. I tell people how I help the people in agriculture. I'm going full agriculture. I came to realize I enjoy what I do. It's funny, I went from hating agriculture to embracing agriculture. I think that's because even my sisters and everybody else in the family that grew up on the farm, hate it to this day. They don't even have backyard vegetable gardens or grow anything except flowers in their front yard anymore. But, going back to farming, being in the soil and all that kind of stuff, you and I love that. I go seven days a week working on an average, with pollinating working with farmers that want to grow year round, and things like that. Sometimes I do take on too much, but I got to get it done. Time goes fast.

#### Jerry...

Well, it's better to have too much to do than staying at home and sitting in your chair and watching Netflix, Berry. I think you're doing the right thing.

#### Berry...

I like and enjoy and sometimes I always wear myself out when it comes to beekeeping, but I'm just not trying to grow food or build a supplemental income but to teach and motivate others. I'm in a little bit of all of it.

#### Jerry...

Pat yourself on the back because as an old guy myself, you and know this, as we I look back over our shoulders to the past and then I look forward to our society now and our growing population and what you and I have learned Barry, is if we don't have enough to eat or if there's not enough food in the grocery stores then what happens? We now are getting like 30% to 40% of our fruit, nuts and vegetables from other countries. If they decide to say, "Oh, we don't like you anymore have a nice day," we're in bad shape. And so agriculture is super duper important and I wish we would get more attention and people would realize more value when the go to the big box grocery.

#### Berry...

That I agree with you, and some of the hard times that we have experienced right here recently have been eye opening. Like you said, we would go through hard times for putting food on the table if we are not agriculturally self-sufficient as a country. As a farmer and a beekeeper, I didn't have those problems. It wasn't a grocery store thing back then. And that's why I dug deeper into agriculture because, you know, I never thought about growing cucumbers in the Wintertime. The extended seasons are growing, with honey bees pollinating all that and then even more in the Spring, Summer and Fall of the year. I got this job as a beekeeper that I'll never not have anything not to do because I made it my thing, my love. I tried to outsmart honey bees and manage them so they were 100% perfect and I've never done that yet. Anybody who says they know everything about honey bees is a liar. They're smarter than we are. Sorry. They test us every day.

#### Jerry...

Oh, they do. And it's humbling to be a beekeeper because, yes, you do make mistakes and even though when you think, well, gee whiz, I got this figured out, um next season, it's entirely different because honey bees are so genetically diverse. They're survivors and the question is, who's managing who? Are we managing them or they managing us?

#### Berry...

I've tried a lot of different bee-

keeping stuff over the years. But I would say I'm successful and I enjoy what I'm doing and I hope I can keep on doing it.

#### Jerry...

What you're doing is educational outreach, not only in beekeeping but in other parts of agriculture because you're planning for the future. You know, we're all just visitors here and we need to teach the rising generations the value of what we do and how we do it and the environment. It's not all about STEM education. We got to put agriculture in there someplace.

#### Berry...

One thing I found out from adults is a lot of adults want to jump where I am as a beekeeper. When you start trying to teach them and they don't get all the nuances of how to watch honey bees, how bees do this, how do they do that, everybody gets frustrated. But, they say all this information is in books. I don't really care for that stuff. I'm just listening, smelling and seeing what's in a bee hive, to do those things with the techniques that I was taught and I learned from my granddad and my commercial beekeeping mentors. I can guarantee granddad would not know what a honey bee manager role is now. You know, I mean, but I've learned to deal with that groaning. I'm a Master Beekeeper with the North Carolina State Association. And I became a Master Beekeeper back in like 2001. I was just going through the paperwork really because my daughter asked me as much as you know, do you need to do that? So I joined up and I did this and I did that. But I got my best knowledge from actually doing it. That's where I learned. I learned it in the field. I would love to give credit to Dr. John Ambrose. I became a Master Beekeeper under him. He tutored me. What a man. And that's what I like about him is he taught me a lot a being humble. It's not belief. There's something greater than you. And I got there from Dr. Ambrose, I mean, I've always had faith, but I grew my faith.

#### Jerry...

It's amazing what honey bees can do. And for us to have this relationship with an insect when everybody's afraid of insects. I don't want cockroaches in my kitchen, but we have this relationship with an insect, and it's amazing. It's humbling how they interact with the environment, how they interact with us. Yeah, no, I'm totally amazed every time. What would be your advice to new beekeepers?

#### Berry...

Really get to know your bees don't be afraid of them and, turn off YouTube and all podcasts. I when I try to work with people, I have such hard times with them. When I see them talking things that they don't know about or how to do I tell them you've got to work the problem out to understand the problem. Just giving you the answer is not the answer. That's one of my lessons is come learn it, don't rush it, use your eyes.

#### Jerry...

You're planning for the future. A better future.

#### Berry...

And let me say this now and I'll

let you go because I thought about it yesterday. This was my thought about this thing we call Black History and everything that goes along with that. I tell people about my all time about my granddad. You hear me talking about how he engaged me and embraced me in a way, that I always felt I belonged. And I've never had the problems with other people that some had. Not that I'm disconnected from the world. It always told me I wasn't better than anybody and nobody would harm or tease me. And I feel real by that.

#### Jerry...

Well, yes. And yes, and just to share my thoughts but to me, color makes no difference. It's about us as beekeepers and our bees. If you look at a field of wild flowers, a field of flowers, there are all sorts of different colors of flowers, aren't there? And so we should be a flower and enjoy all the other flowers.

#### Berry...

That's what we should be. It is my grandson I raised the same way. My sisters tell me so much that I am like my granddad. Well, he raised me all by looking forward for the good. I don't know where I heard this, but I know it's not mine. "The thing I learned, I learned that my grandfather", that's me. Everything I've learned from my granddad has benefited me in my life.

#### Jerry...

Well, you have been blessed and now you are sharing those experiences with others... so we're all in this together. It was so nice talking to you and I appreciate it and you made it very interesting. And if I can ever help you in the future or do something, like I said, we are in this together, and I'm here to help. Thank you. BC





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# **Detroit Hives**



Historically, universities and African American colleges were set up in the 19th century in the United States to provide educational skills and opportunities to people of Black and Indigenous descent. In 1862, the Morrill Act was passed by Congress, named after the abolitionist Justin Smith Morrill from Vermont. This act was a significant step towards offering equal educational opportunities to all. It mandated the establishment of a university in each state to educate Black and Indigenous men and women in agriculture, mechanical arts and beekeeping. These colleges were known as 'Land-Grant Universities'; they included seventeen African American colleges and 30 American InNina Bagley

dian colleges. Tuskegee University in Alabama was one of the seventeen.

Margaret Murray Washington was a remarkable woman. She was the third wife of Booker T. Washington. In 1890, Margaret was hired as the lady prin-

cipal of the Tuskegee Institute. She oversaw the female students and founded the Women's Industries Department.

The Lady Beekeepers Club at Tuskegee University was founded by Margaret Washington in 1892. It was a highly regarded club and the first of its kind in the country. Besides all her achievements, Margaret Murray Washington was considered the "First Lady of Tuskegee."

Langston University was another Land-Grant University founded in September 1898. The picture above shows the agriculture class from the Langston Agricultural and Normal University for the colored people of Oklahoma. (*Gleanings in Bee Culture*, November 1913).

Thomas Monroe Campbell was America's first black American extension agent. In Alabama, four people were appointed to educate rural farmers in 1906. Managing the Moveable School of Agriculture was Campbell's first major assignment.

The extension program was successful at North Carolina State University in Raleigh. As noted, the picture of H. E. Webb, a colored Extension Agent, gives the following quote. "H E. Webb, Greensboro N.C. colored Farmer demonstration agent is keenly interested in beekeeping extension work among colored people." (Gleanings in Bee Culture, October 1928.)

Despite the European introduction of honey bees to North America in 1622, beekeeping was no longer a White man's activity. Once the bees arrived in North America, they would cross many cultures. On the front cover of the *American Bee Journal* in April 1923 is a picture of blossoms of Logwood, a forest tree and a vital honey source in the native West Indies and Central America. A long tradition of Black beekeepers existed before the 1890s.



Numerous organizations have been involved in this cause to keep a history of beekeeping in African American communities. These organizations actively promote beekeeping and agriculture.

One bee organization that caught my attention is the Detroit Hives, a 501c3 nonprofit organization that believes a healthy pollinator future reflects a healthy future for humanity. "Our mission is to improve the quality of life for people and pollinators by transforming vacant lots into educational apiaries." (Timothy Jackson, Detroit Hives, 2024.) They are known as "Detroit Hives," a pollinator education and conservation initiative that collaborates with schools, organizations, and businesses to create a social, environmental, and financial impact. Founded in 2016 by native Detroiter Timothy Jackson and Nicole Lindsey, Detroit Hives now exist in over 32 locations. BC



Nina Bagley has been an urban beekeeper in Columbus, Ohio, for over 20 years. Nina worked with a master beekeeper for eight years, raising queens. She has several apiaries in the City, raising her own Queens, and has her own Ohio Queen Bee LLC business. Nina has completed Dr. Joe Latshaw's instrumental insemination class. She completed the Master Beekeeping class taught by Dr. Jerry Bromenshank (Program through the University of Montana.) Nina avidly collects early bee books and history from the 1800s. She writes articles Bees and Women for the Bee Culture Magazine. Nina has managed the Bee Pavilion at the Ohio State Fair for ten years, sponsored by OSBA. She oversees the State House bees and the Franklin Park Conservatory bees. She also managed the Frank Fetch Park Bees. In 2010 it was the first pilot hive placed in a park in Downtown Columbus, Ohio. She is currently the Franklin County Bee Inspector for Ohio. Nina mentors inner city kids educating them on the importance of honey bees.



# Cafini Z

When I was first asked to write an article for Black History month, it was with emphasis on recognizing all beekeepers contributing to our industry at all



Listen along here! https://www.beeculture. com/cafini-z/

levels, and I prefer looking at things from a drone congregation area point-of-view, so this will be an inclusive commentary focusing on the parallels between the interdependence of humans and honeybees and the interdependence of Black Americans and the rest of this nation's populace.

As a Black beekeeper living and working in a very international, yet very typically American city - the United States capital - it is easy for me to notice connections that many others probably would not make. All of the apiaries that I manage are in wealthier parts of town where people who look more like me can no longer afford to live and/or have been excluded from accessing, despite the use of our labor and destruction of our communities to build and maintain these spaces. The built landscape of the District of Columbia. much of which is well over a century old, was originally built and maintained by enslaved Black people after being surveyed and designed by a free Black man. Yet over the generations since then, most descendants of enslaved Africans living in DC have been repeatedly pushed further and further south and east within the city or

pushed out altogether into substandard living and disgraceful educational situations by red-lining and other less overt forms of racial discrimination. Similarly, even though we humans depend on honey bees and other pollinators for two thirds of our nutrition, we push them around the nation in trucks, subject them to an array of toxins because we are mono-cropping or afraid of being stung, and most people (non-beekeepers) barely bat an eve at the fact that honey bees manage to produce profitable crop yields and survive all this while los-

ing upwards of forty percent of their populations each year.

Along with building the physical foundations of Washington, DC among other antebellum cities, enslaved Africans and their descendants both produced for and served as the foundation of this nation's economy. Most of the food, raw materials, much of the music and art, many inventions and ultimately the wealth of the elite in the U.S. was initially produced by Black people's hands, all while those reaping the most benefit from these contributions comfortably segregated

themselves from and slandered the very source of their wealth. Unfortunately, honey bees have endured a similar fate. After being brought to North America to provide pollination services and especially honev to humans, too many of my fellow urbanites and suburbanites have come



to detest having honey bee hives in their neighborhood on the odd chance that someone gets stung, or because a swarm almost moved into a local reporter's attic – as if all honey bees live to do is sting folks. There is also much credence given to the fact that in some ways, honey bees have pushed out and helped reduce native bee populations and therefore we should not be so concerned with "saving" them. Now, I of course have nothing but love for native bees, but would we be able to produce as much food with as much variety as we do without honey bees? Would this country be as rich as it is without having enslaved Africans?

In considering answers to those questions it may become clearer just how much we all need each other – human and honey bee alike – and that being realized, how much we all need each other to be healthy and well. Like honey bees are forced to endure more pesticides and insecticides than would allow them to sustain instead of lose around forty percent of their populations every year, most Black people in the District as well as cities across this nation have been forced to live with lead water pipes in food deserts, in closest proximity to







polluting energy and manufacturing facilities, landfills, superfund sites, busy train tracks and even shallowly buried undetonated bombs around the many civil war forts that line the city. All of this of course takes a toll on our health, especially that of our children, leading to higher rates of cancer, asthma, heart disease, fatal accidents. ADHD and behavioral problems, which in turn only adds to the country's ballooning healthcare costs and more deeply entrenched poverty. Over more recent years, some of these detrimental determinants of human health have been addressed, just as some crop sprays have been banned and at least in DC, outreach and education is provided by local beekeepers to the broader community about the benefits of urban honey bee hives and how we can all live more harmoniously with bees and the natural environment, but there is definitely much more that needs to be done.

The point is, we are all better off - regardless of species - when we acknowledge the contributions and hefty sacrifices that honey bees and descendants of enslaved Africans have made and continue to make, and work to substantively include all of us in decision-making that considerably impacts all of our lives, rather than only trying to control us out of prejudicial fear of being stung.

Cafini Z is a concierge beekeeper and urban farmer in the District of Columbia, who has been trained and worked in agriculture since 2014. When not doing something bee or plant related, Cafini can be found enjoying being a parent and studying economics, finance and politics.

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# Dermot Jones

# From East Oakland to Apiaries Dermot Jones' Beekeeping Journey

Born and raised in East Oakland, Dermot Jones' life has been a testament to resilience and adaptability. From an early age, he worked alongside his father, a **general contractor**, who instilled in him a strong work ethic and hands-on skills. Diagnosed with Sickle Cell Anemia as a child, Dermot refused to let the condition define his life and embraced a variety of pursuits, including photography, hunting, fishing and even roles in armed security and fugitive recovery. Eventually, seeking a safer and more family-oriented activity, he turned his attention to beekeeping - a decision that would profoundly shape his future.

#### Discovering Beekeeping

Dermot's introduction to beekeeping was sparked by a friend's enthusiasm. Intrigued, he delved into the subject, reading Michael Bush's *The Practical Beekeeper*, watching numerous instructional videos, and conducting extensive online research. In 2013, Dermot attended his first meeting with the Mount Diablo Beekeepers Association (MDBA). Despite initial reservations, the group's welcoming atmosphere convinced him to join. It was a decision that marked the beginning of a lifelong journey.

Building Jones Family Honey and Jones Family Bee Removal

As a first-generation beekeeper, Dermot transformed his passion into a family-owned and operated business — Jones Family Honey and Jones Family Bee Removal. Specializing in humane honey bee removal and relocation services, the company addresses the needs of homeowners and businesses dealing with unwanted bee colonies. By safely relocating bees, Dermot ensures their preservation and contributes to maintaining healthy bee populations.

Additionally, Jones Family Honey offers locally produced honey and beeswax products, providing customers with natural, high-quality goods while supporting sustainable





beekeeping practices. The business also collaborates with MDBA club members by donating removed colonies and swarm collections, strengthening the local beekeeping community and fostering sustainable hive management.

#### Leadership as MDBA Vice President

Since 2021, Dermot has served as Vice President of the MDBA, a role that allows him to champion education, sustainability and inclusivity within the beekeeping community. Collaborating with fellow beekeepers, Dermot organizes educational programs, workshops and community outreach initiatives that foster greater appreciation for honey bees and their environmental significance.

#### **Empowering the Next Generation**

One of Dermot's most impactful contributions is his leadership of the Juvenile Hall Beekeeping Program at the John A. Davis Juvenile Hall in Martinez, California. This initiative introduces at-risk youth to the world of beekeeping, offering them a unique opportunity to learn about hive management, honey production

and the ecological importance of bees. Through hands-on experience, participants gain practical skills and a sense of responsibility, which can be transformative in their personal development. Dermot's dedication to this program underscores his belief in the power of education and mentorship to effect positive change.

#### Creating a Welcoming Beekeeping Community

As a Black man in a field that has historically lacked diversity, Dermot's journey stands as a beacon of possibility. By embracing his passion and breaking down barriers, he has shown that beekeeping is a space for everyone. Dermot's story serves as an invitation to people from all backgrounds to explore the world of beekeeping, celebrating its joys and opportunities. He hopes that by sharing his experiences, he can inspire a more inclusive and diverse community of beekeepers, united by a shared love for honey bees and the environment.

#### **Balancing Diverse Interests**

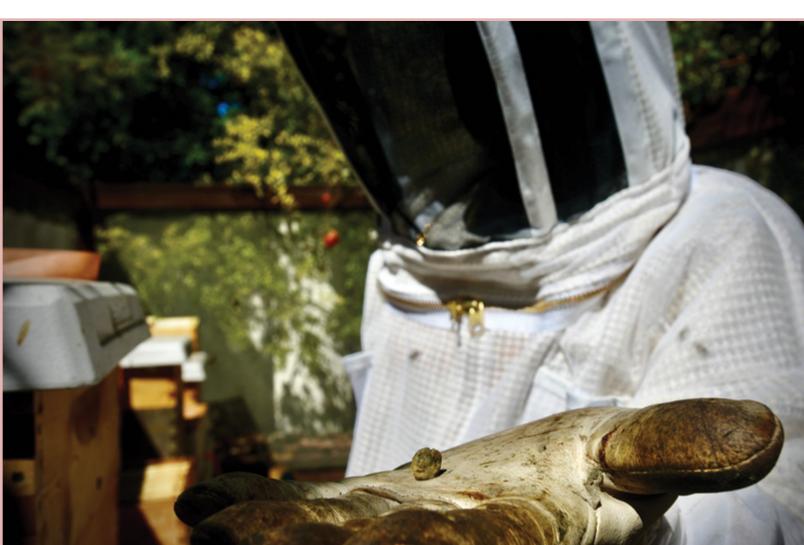
Beyond beekeeping, Dermot

leads a life rich with varied interests. An avid motorcyclist, he finds joy in the freedom of the open road. Currently, he is also pursuing a private pilot's license, demonstrating a continuous desire for learning and new experiences. These activities, alongside his professional and beekeeping commitments, reflect a dynamic lifestyle driven by curiosity and a passion for growth.

#### Vision for the Future

Dermot's vision for the future is as ambitious as it is inspiring. He dreams of expanding educational outreach through workshops and programs that emphasize the ecological importance of bees. He plans to continue his collaborations with MDBA members and remain steadfast in his support of the Juvenile Hall Beekeeping Program, all while introducing more people to the rewarding practice of beekeeping.

But more than that, Dermot wants to keep doing what he loves: caring for bees, mentoring others and showing the world what's possible when passion meets purpose.





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# Sean McKenzie



Photo Credit: Patricia Lake Photography.

As a child growing up in Jamaica, Sean's earliest memories of honey bees come from honey hunting with his cousins in the bush (jungle) and visiting his grandfather's apiary in the Blue Mountains. "I've always been fascinated by insects that live in colonies, like ants and bees."

He took every opportunity to explore his interest in bees reading and watching documentaries, then in 2006 a chance meeting with the beekeeper at St. Anselm's Abbey School in Washington, DC where he was doing fleet maintenance on the school buses began his beekeeping journey in earnest. With the support of his first mentor Bill Lippy, he began actively researching and caring for honey bees. What started as an academic interest turned into practical knowledge through hands-on experience. Sean said, "I remember Lippy asking me if I was sure that I had never been in a hive before because I was pointing out the difference between drones and workers, identifying the instars evident on the frames, and I spotted the queen. Lippy said, "You're a naturalist!" Lippy then asked me if I had a place to keep bees and then invited me to partner in his apiary, assuring me that he had all the equipment needed." To increase their colony numbers, they initially started purchasing queens and did a couple of cutouts. "It seemed like the only hives that thrived were from the cutouts so I began to focus more on trying to source bees from peoples walls and trees." The preferred criteria was for colonies that had an anecdotal history of having survived continuously for three years without

During this time Lippy introduced Sean to Toni Burnham down the street at the Franciscan Monastery. "This was before there was a bee club in DC and Toni and I quickly became thick as thieves doing bees and outreach together. Toni was working on putting the DC Beekeeper Alliance together and I did everything I could to help and support her." "At that time the laws for bee husbandry in the district made little sense stating that you could keep bees but they had to remain in the box. Building the Alliance and building community awareness and support for honey bees was the first step in getting the laws changed." Sean reminisces, "We spent almost as much time in classrooms and tabling at events as we did in the hives."

Sean taught himself conventional beekeeping techniques with a handful of colonies and a few good old books (some on PDF) like *The Hive and the Honeybee* by Langstroth, *ABC of Beekeeping* by A.I. Root and the *Beekeeper's Bible*. Websites like Scientific Beekeeping (Randy Oliver), Bush Farms (Mi-

chael Bush), among other sites also helped. "I just used to Google PDFs on beekeeping. I would read things and then try them. The bees were my best teachers. Either it worked with them or it didn't, I would think of a different approach if something didn't work and I learned from that. I spent a lot of time deciphering the nuances and got to really hear and understand what the bees were telling me. It also became evident that many things had to be adapted to work in my specific area."

He took his first actual beekeeping course with Pat & Jim Haskill out of Northern Virginia which helped develop his vocabulary and learn the lingo of things he had internalized from his time in the hives. "Pat and Jim became good friends and we worked together with Toni to get the beginning beekeeping class off the ground in DC through the Alliance. In the early years he also spent some time working with Billy Davis of Sustainable Beekeeping in northern Virginia doing queen rearing for the queen exchange consortium. Later, I spent Thursday evenings at the Haskills' kitchen table for many months studying mastery level beekeeping. Sean is currently enrolled in a Master Beekeeping course through Cornell. "I'm always open to learn new things as well as review academic knowledge but mostly having the paper credential assures potential students."

Sean faced the inherent obstacles of the urban beekeeping world, from Winter dead-outs to constant vigilance for pests, parasites and diseases, to keeping the neighbors on board with unwavering resolve. But he quickly accelerated to raising queens, recordkeeping, selecting for traits & characteristics. Within a few short years and with the help of friends and colleagues his number of colonies grew to over 150 within the urban boundary of Washington, DC and his primary focus had turned from basic beekeeping to honey bee research.

His specialty is in colony assessment, queen rearing and breeding programs based in Mendelian style



101 course students learn how to install a nuc in Bee CARE Institute's teaching apiary, Washington DC. Photo Credit: Rachel Perry.

A school group outreach program in Washington DC. Photo Credit: Rachel Perry.



genetics. Sean has over 20 years of experience with breeding and hybridization, focusing on somatic and behavioral characteristics and working with a variety of animals including fish, dogs, birds and honey bees. His goal in his work with Capitol Bee CARE LLC and Bee CARE Institute (a registered 501c3) is to breed honey bees that are especially well suited to the Mid-Atlantic Region and that have a proven record of survival, pest & disease resistance, gentleness, productivity and few other traits and characteristics. "Our work is not just about surviving the year or getting a honey crop, but pushing the envelope on evolution to ensure that bees will be thriving into the future with us." he said. He has data point apiary sites located throughout the District at locations such as NPR's rooftop, Park Hyatt DC rooftop, Marriott in Seven Corners and a number of other private interests and homes. To this end he has also racked up five plus years of experience as a bench researcher conducting honey bee research at the University of District of Columbia, STEM Center for Research and Education and Maryland University vanEngelsdorp Bee Lab. And now has a lab of his own of sorts at the Franciscan Monastery of the Holy Land where he also manages the Institutes circular teaching apiary and participates in teaching beekeeping with a unique set of curriculum from beginning beekeeping through a mastery level. In addition, Sean has presented his work in a number of arenas including the National Institute of Science, the National Honors Science Society and the American Association for the Advancement of Science. He's been featured in a few books such as Bees in the City (Alison Benjamin) and articles including one published by the State Department. He has also featured in a handful of documentaries by local filmmakers including Bee Anonymous by Kate Wagner Flannery and Humming to New Strains that aired on Al Jazeera.

He knows that a career in beekeeping is not about instant success but about the journey of honing one's craft and making a meaningful contribution. Sean McKenzie is currently the Head Beekeeper at Saint Anselm's Abbey School Apiary and Manages the teaching Apiary at the Franciscan Monastery, both in DC. He has worked with commercial outfits in

Tennessee, Georgia, South Carolina, Maryland, Northern Virginia and Pennsylvania in a number of capacities from apprenticeship to advising, queen rearing, building nucs and packages and honey harvest. He was also an apiarist and queen rearing expert employed by the University of Maryland. He plays an advisory role on projects in Columbia, Zimbabwe, Haiti and his home country of Jamaica. Sean has sat on panels, committees and listening session groups to help shape legislation and policy for state, federal and international governments and groups.

Sean stands for the belief that beekeeping outreach is a powerful means of connecting with others, sharing unique perspectives, and leaving a lasting impact on the world. In addition to teaching courses with Bee CARE Institute, Sean is still occasionally an instructor with DC Beekeepers Alliance and co-teaches an urban beekeeping short course in conjunction with the University of the District of Columbia's Extension Service program. He has also trained beekeepers in Haiti as a part of the Partners of America, U.S. AID Agriculture Development Program. He regularly engages in community outreach activities such as 4-H junior beekeepers clubs, supporting the apiary at the National Arboretum, USDA Bee Lab Pavilion at the Smithsonian Folk-life Festival, and a number of events sponsored by the National Parks Department. Not

to mention his annual appearance at the White House for the Easter Egg Roll honey bee exhibit and presentation during the Obama Administration. He is regularly invited to speak at a variety of bee clubs and meetings.

He firmly believes that every person has a part to play in conservation and he is committed to helping each person discover the ways in which they can help. He holds a Bachelor of Science with honors in Education and Public Health from the College of Agriculture, Urban Sustainability, and Environmental Science from the University of the District of Columbia (2014). In his journey as a professional apirist and educator, Sean continues to build a legacy of bees that exhibit resilience, beekeepers that understand their responsibility of stewardship, and a community that is actively involved in efforts to provide and protect habitat for honey bees and other pollinators.

Sean is a member of a number of clubs and organizations including being a former VP of the DC Beekeepers Alliance, Eastern Apiculture Society,



Benito Jasmin, a Haitian beekeeper, took this picture of preparing for the honey harvest with a school group in Haiti.

Coloss International Bee Research Association, American Apitherapy Society and BUMBA. Sean's legacy extends beyond his own work; he actively mentors aspiring beekeepers in his community, sharing his experiences and knowledge to help them navigate their own paths. Through his dedication to the craft and his commitment to supporting others, he is sowing the seeds of a stewardship legacy that will inspire future generations of beekeepers.





# James Dove



Who would have ever known James and Alice's only boy would one day venture into beekeeping?

It all started in 2015. Mom passed away Fall of 2024, I had retired less than a month prior. My sister Annie retired shortly afterwards and had been discovering new adventures around the county. As we visited one day, she informed me that she was planning to take a beekeeping course. So, I decided to enroll myself and spend some time with sis. It was a beginners beekeeping class. The class lasted 5 weeks, then we took a test; I passed! The Club, Beekeepers of the Neuse asked everyone to join chapter, but I was not interested in being in any clubs. I have plenty of other things to do. Having dogs, fishing, hunting, and staying active in my church was already a plate full. Annie did join the club and begin attending the monthly meetings. After a meeting she shared

that the meetings were an extension of the bee school and she had learned new things about the honey bees, their behavior and techniques of how to work with the bees. Now that suckered me into joining the club. It was good thing that I did join because I met some wonderful beekeepers and a great mentor in Bob Kemper. Annie and I started our apiary with two complete colonies.

They both swarmed on us within 72 hours. So now we had four colonies and the labor of love began! I began assisting Bob in the club apiary, learning on every inspection, week after week. I survived the stings and the heat that Summer and those little creatures had me hooked.

Amazingly the first year was ending and the new club year had begun. At the next club meeting I was voluntold that I was being nominated as vice president for the chapter. I am now thinking that these people

are nuts and that they had been stung too many times. That lead to two years as vice president and three years as president of Beekeepers of the Neuse. Those were some fulfilling years as we cultivated a lot of fun, learning and fellowship. During my tenure as a local officer, I was asked the join the NC State Beekeeping Board of Directors as a Regional Director in the Coastal Region. I have served in this role since 2016. It has been a true blessing to serve and meet some of the most wonderful people in the industry. They grew me with the compassion and love they have for beekeeping. Thank you NCSBA family and friends!

My personal beekeeping adventures and endeavors span from small farm pollinator, swarm catcher, structural cutout/bee removal, mentor/coach. Several of my years while president of the chapter I was responsible of managing the clubs

colonies (around 20). I was blessed to have Doc, better known as Kirby, to assist me. We made splits, doctored bees and even reared some queens for the members. It is always a plus to have a real trooper with work with.

One of my fondest memories was a competition the club had sponsored by Mr. Bill Thering, our Master Beekeeper. Teams were formed with a mix of newbies and ole folk.

The winner would be the team that produced the most colonies from one package of bees. That was a great learning venture! My team produced 11 colonies, but we didn't win cause we made some awful tops for our colonies and many perished;

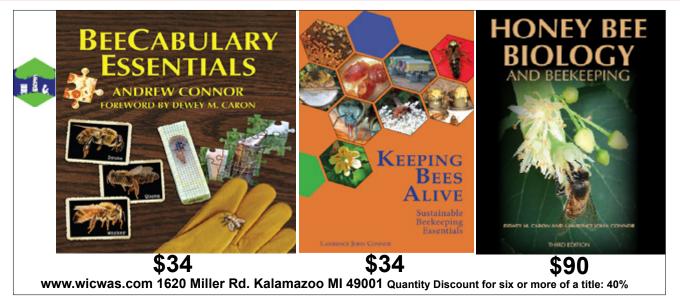
but I learned a life long lesson, the hard way. Thanks again Bill. This competition drove my passion to make as many bees as possible. The next year my Bee Buddy, Cary and I built a couple hundred hive bodies; 5 frame, 8 frame, 10 frame. Shims, inner covers, tops (without holes). It was game on from there. These items where constructed from repurposed 1by 12 boards that had been removed from apartments that had been flooded from hurricane Fran and Floyd.

I am also blessed to live near a queen breeder, Rick Coor. Rick has been so kind to allow me to shadow him in his queen mating yard and even graft larve. I been truly blessed to have been surrounded by such an accomplished group of mentors.

This year of 2024 has been filled with personal challenges but by faith in my Savior I'm still standing and the honey bees are stinging. I decided to dedicate most of my time mentoring young and older beginner beekeepers! That mission is to teach and encourage other to be able to share the love and respect of beekeeping. Teach one, reach one, more can do more and have more!

I can announce that I am a Certified NC Master Beekeeper! All Glory to God!!!





# Alex Alexander

#### Dewey M. Caron

Alex Alexander started beekeeping in 2017. He says his interest in beekeeping was "a natural". He enjoys camping, hiking, nature photography and is a fly fisherman. His newest interest is surf fishing for ocean perch. He is also a gardener.

Alex resides in the Willamette valley of western Oregon, in a house he built outside Corvallis, Oregon. He moved to Oregon nearly 30 years ago. While attending a job fair, he left a resume with the USDA, Forest Service (FS) looking to move from the technology industry in the San Francisco, CA Bay Area. He was pleasantly surprised when they called him for an interview and extended a job offer with the USDA Forest Service.

The Forest Service position was to work in the Siuslaw National Forest. The forest encompasses over 630,000 acres of unique, highly and varied ecosystems, from the lush forests of the coastal mountains to the unique Oregon Dunes and the beaches of the Pacific Ocean of center west Oregon. Once in the FS, he has advanced through positions of various duties and responsibilities. He currently serves as investment manager & project manager supervisor, USDA. The position is based in Washington, DC; he works remotely from Corvallis, Oregon.

While in the Forest service, he has attended community colleges and holds six associate degrees from three colleges USAF CC, Pierce College, Lane College and two BS degrees from Oregon Institute of Technology. His studies have concentrated on Social Science, Natural Science, plus a specialty in International Business & Management Technology.

Alex's initial bee hive was a Warre hive, complete with an observation window. He purchased it from Bee Thinking in Portland, OR. He was interested in this outlet, in part, because their woodenware was western red cedar hive boxes and their business philosophy resonated with him. Their website listed Bee Thinking as "the world's first beekeeping supplier specializing in foundationless Top Bar hives, Warre hives and Langstroth hives made from sustainably harvested wood."

The original owner changed the business name to Bee Built. It was purchased by a new owner in 2019 but it still sells Warré and Top Bar hives, in addition to Langstroth hives. The new owner continues to "value supporting and improving the environment and building up people to make strong communities." They call themselves a "different kind of bee supply company" https://beebuilt.com/pages/our-why-at-beebuilt.

For His new Warré hive, Alex selected carniolan bees, purchased as a package from Glorybee in nearby Eugene, OR. He picked up the package during their annual bee weekend. Glorybee's bee weekend includes displays, interest exhibits of bee organizations, free mini-lecture sessions on bees, demonstrations on how to install package bees and an opportunity to visit their retail bee supply store. It is also distribution day for over 1000



pre-ordered packages of bees trucked to Oregon from a California supplier.

Alex recalls his first beekeeping year as "great." The bees expanded staying within the Warré frame outlines. He nadired a second box, and the bees stored sufficient surplus honey to overwinter. The second season however was not a carbon copy for the Warrė. All was not lost however as he added a second hive, this time a Langstroth hive, to his backyard apiary.

The suggestion to add a standard Langstroth hive came when Alex enrolled as an apprentice in the OR Master Beekeeper program. The program teaches and emphasizes movable frame beekeeping. He took the program instruction of biology/management lecture/discussion sessions at the GloryBee sales offices from Lane County Master Beekeeper program instructors Judy Scher and Rita Ostrofsky. His mentor was Kelly Goodwin.

Kelly recalls her year as Alex's mentor fondly. She says: "Alex, though he was eager to continue his beekeeping adventures with his Warré hive, patiently learned hive management on the Langstroth equipment required by the OMB program. Curious and open-minded, Alex was always asking great questions and making perceptive observations. He was also an incredibly gracious, considerate apprentice. Learning with him was a real privilege."

Kelly says she remembers, "We worked on siting, forage assessment, and getting to know each other's learning styles." She says the "side-by-side learning really offers participants an opportunity to excel, regardless of their learning style. I tried to impress upon my apprentices that I would be learning as much from them as they would from me. Our interactions always pushed me to improve my skills and understanding."

In April of the next year mentor Kelly had an allergic reaction during a group hive inspection. She described it as "... a great illustration of beekeeper safety; we got a first-hand example of what a non-local response looked like!" Kelly says "...sadly I sent my apprentices off to other mentors" and taught students through a school window for a pollination unit at her school job. A visit to an allergy specialist confirmed her allergy to honey bees. She has since gone through desensitization and has returned to beekeeping and co-teaches the pollination unit. She has scaled back from 25 colonies to about ten.

Oregon State University Master Beekeeper program specialist and Research Associate Carolyn Breece says, "Alex has been a regular at our monthly gathering, Friday in the Apiary, initially as a participant. He now has stepped up as a hive leader." She continued: "We all love Alex's cheerful demeanor. He immediately connects with beekeepers of all levels. He is a highly effective educator, always eager to learn and to help others with his knowledge." She goes on to say her favorite thing about Alex is that "he encourages beekeepers to maintain a curiosity about bees: think a little deeper, observe a little closer – he reminds us to simply enjoy the bees as you work them."

Alex currently is completing requirements for the Journey level in the OR Master Beekeeper program and has recently certified as a mentor in the program. He is eagerly looking forward to passing on his experiences and expertise to another apprentice beekeeper.

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Alex says his beekeeping objective remains to increase his knowledge of the local flora and fauna of the natural world. He harvests lightly from his three colonies by crushing the honey filled combs. He labels his honey Virgin Honey. Most of his harvest is given away to friends and co-workers.

When I asked Alex if he had any interesting stories/ observations he said, "My most interesting observation to date is each colony is unique" He recognizes there are "numerous approaches to beekeeping available". In my discussion, I delighted in his warm, friendly sense of humor. He has an infectious laugh. His interest in the natural world and how honey bees can teach individuals about the world around them was obvious. We discussed bees for a couple of hours. He plans to continue his beekeeping as he nears retirement from the Forest Service.

Alex indicated his comfort level is three hives, the original Warré and two Langstroth hives. Last year, like many in western Oregon, he had all three survive overwinter. In other seasons, Winter losses are replaced by splits. He says "Anyone can be successful with beekeeping. You do not have to be an outdoor person or have a degree in Entomology. You do need to have a continuous interest and keep trying." He says it is important to "not give up."

At a recent Friday in the Apiary at Oregon State University as part of the OR MB program open hive events, Alex signed up to participate in wearing of a bee beard. He described the beard as "an interesting experience", one he is happy to have achieved. In this endeavor and in his beekeeping in general Alex is a careful and considerate beekeeper, always enjoying learning and expanding his knowledge about honey bees.







# A Helping Hand

Stephen Bishop

Listen along here!

https://www.beeculture.com/a-helping-hand/

A few years ago, at a beekeeper's meeting, we experienced a medical emergency when a speaker from out of town fainted, and we had to call an ambulance. It turned out to be an issue with low blood sugar, but at the time, we didn't know what was happening. Luckily, several doctors and nurses in attendance rushed to his aid and cared for him until the ambulance arrived. While we waited, it took several minutes to track down a sugary substance to help raise his blood sugar — yes, in a room full of beekeepers, no one had any honey. This incident made me think about the importance of knowing where emergency items are located in our meeting spaces. First aid kits, fire extinguishers, and defibrillators are of no use if we can't find them quickly. Even something as simple as a piece of candy could save a life, as long as we can locate it in time.

The episode also reminded me that sometimes we have to depend on the benevolence of others. Relying on others doesn't always come easily. Personally, I cherish my farming and beekeeping pursuits because they provide me with alone time — just me, myself and my stupidity. But doing foolish things while alone only compounds the issue, especially when there's no one around for emergency care and transport. And engaging in reckless behavior without your cell phone is perhaps the peak of foolishness.

So if you're a beekeeper with various bee yards, remember to carry your cell phone. You should probably also carry a first aid kit, Benadryl and an EpiPen, even if you're not allergic to stings. Years ago, my mentor, who was in his 70s and had kept bees for decades, suddenly went into anaphylactic shock from a sting. Fortunately,

his wife was with him and was able to call an ambulance. There seems to be no rhyme or reason why people can suddenly develop a severe allergy to something. Indeed, severe adult-onset allergies can happen to anyone. It happened to me with shellfish, and until that point in my life, my favorite food had been shrimp and grits. The older I get, the more I realize how unpredictable life is and how nice it is to have a helping hand when the unexpected occurs, despite my independent streak.

Many parts of western North Carolina had significant damage from Hurricane Helene last Fall. Although the damage wasn't nearly as bad on our farm as areas further west, we had 10 to 12 large trees down. One huge oak tree fell within five feet of wiping out about twenty hives (for once, I felt like a lucky beekeeper). More importantly, several large trees fell across the road, blocking traffic in both directions. It didn't take long before neighbors (even before the rain had stopped) descended with chainsaws in hand to quickly clear the blockage. Neighbors helped one another; strangers helped one another; foreigners helped one another — a week later, our power was restored by a power crew all the way from Canada. And that same spirit of community occurred across western North Carolina and served as a small silver lining in what was otherwise a devastating event for many.

Whether we need help now or will need it eventually, we're all in this together. Literally, we're all floating around together on a giant rock in the vastness of space. In that sense, we're all neighbors. So remember the words of Wendell Berry: "You might know, or find out, what it is to need help. So help people."



# Minding Your Bees And Cues

About a year ago, we shared a bit of a rant. In our Defend Beekeeping article, we named names and challenged beekeepers to defend beekeeping. We heard agreement from some of you (thank you!); those in disagreement did not reach out (thank you?). We would like to continue this conversation in the spirit of promoting and protecting beekeeping. We hope that you peruse this list of issues, ideas, and inspirations and as the Beatles say, "Come together, right now."

#### **Issues**

We can all agree that the offensive varroa mite feeds on our developing and adult bees and transmits viruses in the process. Can we also agree that this tiny mite pitted beekeeper against beekeeper? How many of you have blamed neighboring beekeepers for your mite problems? While we are not saying that not managing mites is not a big deal (a triple negative we will affirmatively regret when reading this article aloud for (the BC podcast?)), we are saying this: if a little mite called varroa can cause so much nonbee damage, just what is a littler mite called Tropilaelaps going to do to us?

Let's recap varroa. First detected in 1987, it ceased being a serious threat to the beekeeping industry in...

# **Promote Beekeeping**

# **Becky Masterman & Bridget Mendel**





oh wait. We are in year thirty-eight of the varroa era. Otherwise known as 38 AV. While we don't want to be too critical, if we can't come together to tackle varroa in 10 or 20 or more years, what is the future of mite management if the dreaded Tropilaelaps mites cross the border? Can we afford (culturally and financially) to take our time tackling this new pest? Can we wait for scientists and the industry to come to a consensus about when we should intervene in mite population control? Can the bees wait for us to convince beekeepers that they need to monitor for a new pest?

A lack of unified, quick responses to threats is what makes beekeeping harder now than in the recent past. Solutions to habitat improvement, pesticides, pathogens, pests, predators, prices, climate and queen health concerns will come faster if we address the inefficiencies of a divided industry. While impressive efforts for backvard, sideliner and commercial beekeepers to communicate with each other exist, there are too many examples where this communication has broken down or is not robust.

#### Ideas

#### Finding Common Ground

A divided industry is inefficient. When it comes to numbers, generally speaking, one 'side' has the beekeepers and the other 'side' has the colonies. The majority of managed honey bees in the U.S. are managed professionally, but the majority of U.S. beekeepers are hobbyists or sideliners. There are missed opportunities for engagement and help with bee health initiatives between these two groups. And misinformation can spread easily if beekeepers are not communicating with each other. While it might be optimistic or unusual for a livestock industry with different levels of participants to work together to support their animal, the small beekeeping world could become mighty by finding common ground.

Across the country, beekeepers come together to learn about beekeeping management, research and programs. Some states are more organized than others and have impressive coordination of local chapters that feed into the state club. Some states are working on it. And some (we admit- Minnesota!) do not have a

Michigan State University Apiculture Extension educator, Ana Heck holding a frame for inspection with a group of Hives to Heroes veteran beekeepers. Photo credit: Sarah Grassel



system that brings the beekeepers in the state together. While it might be optimistic and simplistic, what if each state worked together to find common ground on their state's top five (or three if consensus is contentious) honey bee health concerns, then shared those with state agencies? It would be an impressive letter with all the state beekeeping club signatures showing support.

Here is a start if you need ideas: 1) habitat improvement; 2) support for honey bee research; and 3) opportunities to improve communication between beekeepers and farmers.

#### **Inspirations**

There are many heroes in the beekeeping world. We hope that beekeepers at all levels know about the work that both Project Apis m and Bee and Butterfly Habitat Fund are doing to support the industry. Please visit their websites and take a close look at the board members. Many are commercial beekeepers. Many are on both boards. Just an FYI what these glamorous positions require: many many Zoom meetings and funding your own travel to represent the organizations at in person meetings. These groups are great at sharing the amazing work they are doing, but they are a bit shy about letting backyard and sideliner beekeepers know just how much time, money and brainpower the commercial beekeepers have invested in these all beekeeper benefiting projects.

We can't say enough about how excited we are to welcome veterinarians to our little livestock industry. Every other livestock industry out there has a long-time relationship with these doctors of animal medicine and it is about time that our animals benefit from the same relationship. We think that their perspective on pathogens, parasites and nutrition will benefit our bees greatly. Please visit the Honey Bee Veterinary Consortium website to learn more. Please make sure you also check out the SHBVC while you are there. The future of bee health is bright!

It takes a special (we mean extremely smart and organized) person to become an apiary inspector. The Apiary Inspectors of America (AIA) is definitely upping their beekeeping game with their work on coordinating a response and education for the tropi mite and their US Beekeeping Survey collaboration with Dr. Geoff Williams



Minnesota Apiculture Extension educator, Dr. Katie Lee sharing in hive honey bee health and management information with a group of new beekeepers. Photo credit: Cory Ryan, University of Minnesota Extension

and Auburn University. Visit their website for the latest on *Tropilaelaps*, the northern giant hornet and the yellow-legged hornet.

It also takes a special (we mean extremely smart and organized) person to become an apiculture Extension educator (EE). While we find ourselves running out of room to name our favorite EEs, we ask you to check out your nearest land grant university apiculture program website and check out the work they are doing. These programs are vital in their efforts to support and provide management research and recommendations.

We ran out of space to mention the brilliant honey bee health researchers, beekeeping club leaders with tireless dedication and vision, beekeepers who are working tirelessly to keep their colonies healthy, USDA scientists who are generating vital data and translating it for all of us to understand, this magazine (and another one) and their efforts to inform beekeepers, the Honey Bee Health Coalition with their brilliant varroa management and nutrition guides and the beekeeping industry vendors who are generous in both their efforts to provide services, but in their endless donations to support clubs. The beekeeping industry has so much going for it. Just imagine our potential to support honey bees and their keepers if we unite and tackle our challenges together, right now.

Has your state come together for the bees? Write to us if you think

your community has figured out how to rise above beekeeping differences to work together for the big picture! We'd love to interview you!

#### Resources

Defend Beekeeping https://www.beeculture.com/minding-your-bees-and-cues-12/

Honey Bee Veterinary Consortium <a href="https://www.hbvc.org/">https://www.hbvc.org/</a>

Apiary Inspectors of America https://apiaryinspectors.org/

Project Apis m. https://www.projectapism.org/

The Bee and Butterfly Habitat Fund https://www.beeandbutterflyfund.org/





Becky Masterman earned a PhD in entomology at the University of Minnesota and is currently a host for the Beekeeping Today Podcast. Bridget Mendel joined the Bee Squad in 2013 and led the program from 2020 to 2023. Bridget holds a B.A. from Northwestern University and an M.F.A. from the University of Minnesota. Photos of Becky (left) and Bridget (right) looking for their respective hives. If you would like to contact the authors about your united beekeeping efforts, please send an email to mindingyourbeesand-cues@gmail.com.



# New(ish) Beekeeper Column Off the Wahl Beekeeping

# SECOND YEAR BEEKEEPING ADJUSTMENTS



https://www.beeculture.com/off-the-wahl-beekeeping-31/

#### Listen along here!

# **Richard Wahl**

**Changes from First Year Basics** 

There is much guidance that can be found about getting started with beekeeping in both written and video formats. Sources will provide the basic equipment needs, where to obtain bees or starter nucleus hives (nucs) and the approximation of costs. There is also a wealth of advice, often in a more generalized fashion, as to the need for mite testing and treatment, a variety of seasonal feeding options and the general care and husbandry of the beehive. It is a bit more difficult to find specific particulars about how things will change and what to look for in the second year of beekeeping. In this article I will cover a number of points as to how the second year of beekeeping husbandry differs from the first year of hive management. The basic assumption is that the first year beekeeper's hive has survived the Winter and the hive has a robust queen and ample supply of worker bees going into the second season.



Hives during a snowy Winter.

There are many cases where the beginning beekeeper has lost a hive over Winter and is then in their second year of beekeeping. A hive that has not survived the Winter forces the beekeeper to purchase a new package or nuc of bees and is putting the beekeeper back in their first year as far as the hive and bee care is concerned. This could also be stated about any Summer swarm catch or a split off nuc in its first year. Any of those situations mean that a second year hive will have different needs and management requirements than a first year hive. Likewise, it is a common practice to not take any honey from a first year hive. This is largely due to the first year hive needing to draw out new comb as well as forage for nectar to build a supply of resources to take care of the

new brood. If previously used drawn comb is available then there is the possibility of collecting some honey from the first year hive. Only after a hive has overwintered and raised a sufficient bee population of foragers will there be an excess of honey for the beekeeper.



Granulated sugar feed in a 3 inch spacer on parchment paper over ½ inch wire mesh.

#### First Time Inspection in a Second Year Hive

The eagerness to get into a hive in Spring to see what is going on is much like the anticipation to open presents at Christmas. But just like Christmas it is best to hold off. Any full inspection until the dandelions are in full bloom is well worth the wait. This will happen well after the maples pop open, which is normally the first significant pollen source here in SE Michigan and occurs about a month before the dandelions. Hive inspections fall into two categories. There is the simple opening of the hive to check on the supplemental Winter candy board, sugar brick, fondant or mountain camp granulated sugar food source. This may require pulling the outer cover off and removing the inner cover and quickly adding any sugar supplement as needed. These checks on feeding needs should be done quickly and only on days when it is sunny with very little wind and a temperature above 50°F (10°C). The hive should be closed as quickly as possible so that any brood near the top does not get chilled. It will seem hard to wait for dandelion bloom to do a full hive and frame inspection when those occasional warm days or even a week occur in late February or during the erratic month of March. Early in my beekeeping career I pulled frames out when March weather was forecast to be sunny days with temps in the 60s and not falling below freezing for a full week. Even with frames identically replaced it seemed that on a later inspection the bees did not re-cluster as you would expect. I lost both hives largely due to my own eagerness to do an early full inspection and ignorance about variable Spring weather changes at the time.

#### Feeding Pollen and/or Sugar Syrup

Once the bees have access to new pollen, whether beekeeper provided or from natural sources, it is a signal to the bees for more brood production and the queen to begin laying more eggs. If pollen substitutes are provided too early in the late Winter or early Spring it will encourage the queen to lay more eggs that become brood which the diminishing number of Winter bees may not be able to keep warm. It is best to wait to add Spring pollen patties when the bees are seen bringing pollen into the hive. This will occur after the first maple buds or dead nettles open that provide natural pollen. In the case of a first year hive as a result of a swarm catch, split or purchase of a new package, feeding of a pollen patty as well as a one to one sugar syrup mix is highly recommended. If the swarm was caught or the split was done during a dearth these resources provided by the beekeeper will help the hive get off to a good start. One past Summer I captured a swarm in mid-August and with heavy pollen and sugar syrup feeding, along with monitoring Winter supplemental food supplies, was able to bring the hive into the following Spring. Those bees would never have had enough time to store adequate supplies out on their own.

If an overwintered hive seems to have a small population or has used all their Winter food supplements it is also a good idea to provide one to one sugar syrup as an added resource. I like to switch to the sugar syrup at the time of the first full hive inspection using the solid sugar feeds up to that point. The one to one ratio comes closest to simulating a nectar flow and is particularly important if there is a Spring or early Summer dearth. A dearth is when there is more than two to three weeks without rain. Although the plants are still putting out growth and flowers, there is very little if any pollen or nectar being produced as the dearth drags on. If the bees do not seem to be using the beekeeper supplied sugar syrup it indicates the bees are finding sufficient nectar from their own natural sources. I once had an overwintered cluster that was no bigger than my fist by late Spring. However, that queen took off laying eggs and the hive turned out to be one of my best the next Summer. If feeding fondant, sugar bricks, candy boards or mountain camp sugar it is best to wait to reverse brood supers until sugar syrup can be provided.

#### **Reversing Brood Supers**

For the first year hive, the reversal of brood supers is not an issue. The package, swarm or split is placed in a new deep, medium super or nuc and only when near 90% filled will the next empty supers be added on top. For purposes of this article it is assumed that three medium supers are roughly equivalent to two deeps for those who work strictly with medium supers. For the second year overwintered hive there are two philosophies among beekeepers about super reversals. Some say not to reverse supers. This follows the idea that in the wild, bees that are living in trees do not have the option of reversing top

and bottom comb areas. As the bees move up during the Winter and early Spring using up their food supply, the queen will move down when space above becomes unavailable and she will reuse the brood area left open below. In this case the beekeeper needs to keep a close eye on their hive, and only after it is seen that the queen has begun laying eggs in the bottom deep, then add honey supers above. If honey supers are added too quickly the queen will continue to move up and begin laying eggs in the honey super. This could be curtailed by using a queen excluder screen between the brood supers and honey supers, but I find the queen excluders when used seem to slow the storage of nectar in the honey supers. In a direct comparison where I used excluders next to hives where they were not used, the hives without excluders nearly always seem to be ahead, with stored nectar and honey, of those that had excluders below the honey supers. It is also a belief among some beekeepers that the egg and young larva brood frames are better when just below the nectar/honey food source just above. If the young open larva are above the food source this is thought to be backwards for the bees. This leads to the reasoning for the second option. The second option is to reverse the brood supers. The caution here is to not break up the main brood and egg cluster if it seems to be half on the top of the bottom super and half on the bottom of the top super, that is, split between two supers. If it is found that the queen is laying eggs and has brood in the upper super and the bottom super is mostly empty of eggs and brood, many beekeepers like to reverse the supers placing the emptier bottom super on top. Since the queen will be working up this provides ample space for eggs and brood before getting to a honey super. It also places any remaining stored honey and pollen just above the main brood super where the bees like to have it. A good time to do the reversal, if one chooses to do so, is at or shortly after the first full hive inspection as noted previously.

A honey super and nine equally spaced frames with previously drawn honey comb added to two deeps.



#### **Adding Honey Supers**

It is best to add honey supers by the first strong nectar flow to take full advantage of that flow. This will vary



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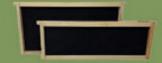


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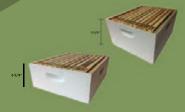
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- Added Strength 1 5/8"
   Top Joint
- ◆ Honey Supers & Hive Bodies
- Added Strength 1 5/8′′ Top Joint

by area and available flora, but usually occurs by late April to early May in SE Michigan. If brood supers have been reversed I like to add two honey supers at the time of reversal to take full advantage of that first nectar flow. If supers were not reversed or if there is only one brood deep for the hive, I like to add a queen excluder until I see a good portion of the first honey super filled with nectar. When adding the second honey super I will pull the queen excluder off as it is not likely the queen will cross over a near full honey super to start laying eggs in an empty honey super above. It is a good idea to add any undrawn comb frames before or early in a nectar flow as this is when the bees are most encouraged to draw out comb. If drawn comb is available from previously extracted honey supers or empty brood frames from a previous season, it is an asset and an assist since the bees need about eight pounds of honey to make one pound of wax. First year honey supers need to be filled with the entire ten or eight frame set. After the first year one less frame can be used as long as they have drawn comb from a previous year. The bees will draw the comb out a bit farther making for easier cap removal during extraction. If nine (or seven) frames were to be used prior to comb being drawn the bees could cross frame the comb or make it a bit wonky due to the larger frame spacing.

#### **Splits**

The timing of when to do splits is another choice for the beekeeper. Normally I like to do splits a week or two after the first full hive inspection. At that point I know if the hive has enough brood to make a split, the state of the queen, and whether that queen is worthy of being placed in a nuc for sale or left in the hive for future propagation because of her superior genetics. For best results splits can be made anytime from early May to around the 4th of July in SE Michigan. I like to do splits earlier in that time frame rather than later as it gives the donating hive more time to recover. A strong split will take three frames of brood placed in the new nuc or hive along with at least one frame containing pollen and nectar or capped honey as a food source. If downsizing one's hive count and a queen is moved to a nuc, the queenless remaining hive may be married to another using the newspaper method resulting in a very strong hive during the nectar flow. Although there are not set dates for splits, those occurring after July 4th may need more beekeeper assistance with pollen and sugar syrup substitutes much as previously mentioned for my mid-August swarm catch. This also assumes these are walk-away splits where either the nuc or the remaining queenless hive needs to produce a new queen. If a queen is to be purchased the timeframe for splits can be extended a bit later. Speaking of queens; drone production needs about a twelve day to two week head start before new queen rearing starts. Queens will fly some distance to mate with drones from other apiaries. The beekeeper can use his own hive drone production as a guide to when other nearby apiaries are producing drones to know when to start queen production. Beekeeper initiated splits are also a good way to minimize the possibility of a swarm emanating from a strong overwintered hive, but there are no guarantees.



A strong hive ready to be split.

#### To Summarize

Second year beekeeping will have additional requirements not seen with the first year hive. It is hoped that nearly all beekeepers can reach the degree of success to go into their second and subsequent years of beekeeping with strong, overwintered hives. If good notes were kept there is no reason to remake previous mistakes. The second year is when the real beekeeping chores begin. When beekeepers purchase locally raised bees in packages or nucs and use locally raised queens for any replacement purposes their self-sustainability may rise to a new level. With careful management in second and subsequent years hobby beekeepers should be able to expect increasing returns from their hives and their honey production.



Richard Wahl began learning beekeeping the hard way starting in 2010 with no mentor or club association and a swarm catch. He is now a self-sustainable hobby beekeeper since 2018, writing articles, giving lectures and teaching beginning honey bee husbandry and hive management.









# Protecting Your Apiaries from Black Bears

#### **Laurie Brown**

#### Wildlife Research Technician Ohio Division of Wildlife

Black bears are the most widely distributed bear species in North America (Hall, 1981). They are present in at least 40 states ranging throughout New England with fragmented populations from the mid-Atlantic down through the Southeast (Maehr, 1984). They are also found in all Canadian provinces and have a limited population

in Mexico. Today, black bear populations in states where they exist are stable or increasing in size (Garshelis, 2002, Hristienko & McDonald, 2007). North American black bear populations are estimated at about 700,000 to 800,000, which is at the highest level in the past 100 years (Beausoleil and Dobey, 2015, Masterson, 2016).

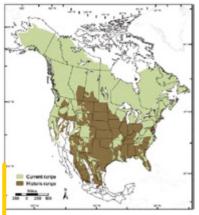
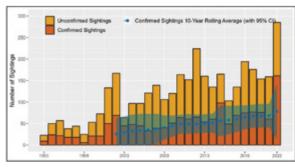


Figure 3. American black bear (Ursus americanus) historical and current range. From Garshelis et al. (2016), the IUCN Red list of threatened species.

Here in Ohio, black bears were extirpated by 1850 due to habitat loss and overharvest. By the 1930's, sightings began to occur and became more common in the late 1900's as growing black bear populations in Pennsylvania and West Virginia expanded westward. The Ohio Division of Wildlife began tracking black bear



observations in 1993. As a Wildlife Research Technician for the Ohio Division of Wildlife working in our northeast district (which borders both PA and WV) for almost 20 years, I oversee bear observations for our district. During this time, I have seen a steady, but slow increase in our residential bear population. Even though our resident population of bears is low, we still experience conflicts. This means our agency must work with residents and local law enforcement agencies to address bear conflict situations.

There are many reasons a bear may visit your property, but usually food is the number one reason. Bears prefer to stay away from people, but when it comes to looking for food sources, humans oftentimes unintentionally provide the food attractant. Bears feed opportunistically so the potential for providing a food resource to bears can be high. Examples of some common attractants are feeding birds and deer, leaving pet or livestock food outside, grilling, having trash out for pickup or open dumpsters on your property. However, unprotected beehives can also be a source of food for bears causing frustration for a beekeeper who has invested countless hours and finances into their apiary.

Bears can cause damage at any point during the year. However, when

natural foods are scarce, and bears move around more, they will venture into backyards in search of an easy meal. The number one bear damage complaint that we receive annually in Ohio from residents is bird/deer feeders. However, complaints about beehive damage also ranks high in Ohio each year. Adult males (boars) are the first to emerge from their

Winter den which usually takes place in March/April while females (sows) with cubs are the last to leave their dens in April. Mating usually takes place during the months of June and July which is when males will travel a far distance, up to 100 miles, to breed with multiple females. Before harsh Winter conditions set in, a bear's main focus is seeking food to help put enough fat reserves on to last during the Winter denning time. This is why it is important to practice good apiary management year-round.

Black bears damage beehives more than any other animal in North America (Huygens & Hayashi, 1999). Because damage to beehives can occur at any point of the year, an apiarist must be mindful of bears getting into their hives at all times. However, with good apiary management practices to help limit bear damage to your apiary investments can easily be protected and damage can be prevented. This is most important during the Spring and Summer months when most damage is likely to occur.

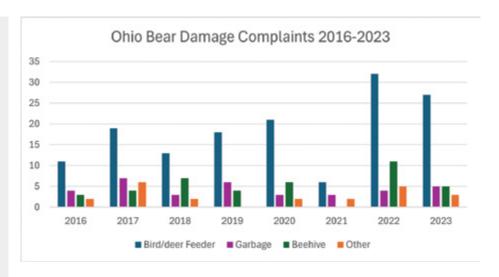
It is important to be proactive to protect your hives before damage can occur. Using an electric fence to protect your hives is the best way to protect your investment of both time and money you put into beekeeping. Without an electric fence, you are inviting not only bears but other predators to enter your bee yard that

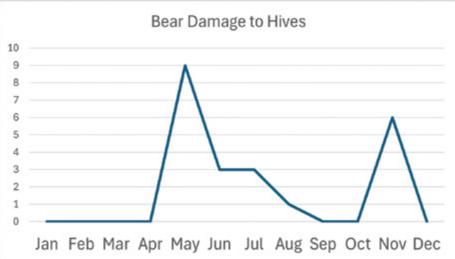
## **Fencing Basics**

- Be sure to place hives at least 300 feet from the forest
- Keep hives back from the electric fence at least 2 feet
- Manage vegetation around the fence
- Regularly check that the fence is on

## For a 12' x 12' area

- 8- plastic tread-in posts
- 4- corner posts (fiberglass or metal with insulators)
- 150'- wire (3 strands of 48' each)
- 1- fence charger (solar/battery/plug-in)
- 10'- double insulated wire for grounding rod
- For extra insurance, use metal flashing (used for chimneys) attached to stainless steel fence wire smeared with peanut butter. Bear will lick peanut butter and receive electric shock.
- Keep hives back at least 2' from fence
- Manage vegetation to make sure it's not coming in contact with fence





## **Good Apiary Management Practices**

- Be preventative! Install electric fencing
- Harvest honey crops as soon as possible after the nectar flows to make hives less attractive to bears
- Clear all items that retain the smell of honey, comb or propolis. These include tools, frames, and empty hive boxes
- Minimize dripping honey when harvesting
- · When possible, keep bee yards close to human activity

Photo Credit: BearWise











will potentially cause damage. What happens if steps are not taken to prevent damage? Bears will quickly learn where to find a free meal. Once a bear associates beehives with food, they will return. Young male bears which learn to feed on beehives will likely continue to do so throughout their life unless they are educated otherwise. An electric fence can be installed quickly and economically. With different types of fence chargers available, it allows for you to install an electric fence anywhere you chose to place your apiary. Fencing supplies can be purchased at local home improvement or hardware stores, or through online fence suppliers.

Most state wildlife agencies, like Ohio, have staff that provide technical assistance to beekeepers that experience beehive damage and can be contacted for additional technical assistance if needed.

Laurie Brown is a Wildlife Research Technician with the Ohio Division of Wildlife in Northeast Ohio's District Three. She graduated from Hocking College, Nelsonville, Ohio in 2004 with an Associate's Degree in Wildlife Management. For over 20 years she has provided technical assistance to landowners who are experiencing wildlife conflicts and damage.

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## **Treatment Free Menace**

## When Beekeepers Become a Menace to Their Craft

Listen along here!

https://www.beeculture.com/treatment-free-menace/

A reoccurring matter of debate is the complaint that treatment-free beekeepers harm those apiculturists that are practicing "the best way to keep bees" and conscientiously taking all the recommended management precautions to control mites in their colonies. By not regularly monitoring and treating for mites, treatment-free beekeepers can create mite bombs where colonies become overrun with *Varroa* and as the colony's population dwindles the mites migrate on drifting and robbing bees to infest other nearby hives.

Treatment-free beekeeping is what most apiculturists would prefer to practice, and almost everyone was treatment-free prior to varroa becoming established globally. Those who treat for mites today, do so primarily as a way to try to help their bees survive. By applying treatments beekeepers are considered good neighbors to other beekeepers nearby. By preventing colonies from becoming a source of mite and pest infestation, beekeepers that treat and stay on top of mite and other issues provide a service to other beekeepers in the area and are considered to be more humane as they may spare colonies from suffering unnecessarily.



Beekeepers that withhold *var-roa* treats from their hives believe they have good reasons for going treatment-free. They point out that historically honey bees have survived just fine for millennia after millennia without human intervention, including a previous time of global climate upheaval.

Beekeepers that don't treat their hives for mites hope their lack of action will assist honey bees in eventually developing a natural resistance to mites and avoid creating colonies of bees that are totally reliant upon constant human intervention to survive. Many of these beekeepers criticize the rapid pace of pesticide resistance that some of today's treatments create in mites. It is hard to find any beekeeper that wants to contribute to the defilement of hive products with the pesticide residue contamination that occurs from some of today's commercially approved mite treatments, not to mention those that are illegally used in an off-label manner. The potential for pesticide contamination has helped fuel a growing market for hive products that are harvested from colonies that are treated humanely and without toxic chemicals and antibiotics.

It's important to note that some treatment-free beekeepers will NEV-ER intervene in any way. In my mind this is not really treatment-free beekeeping as much as it is creating a place for a colony to simply live out its life much as a feral colony would. Other treatment-free beekeepers are open to interventions like feeding to prevent starvation, taking steps to discourage swarming, harvesting honey, and even destroying the existing colony by killing the queen and re-queening while allowing the existing workers to maintain the hive while the new queen replaces the current bee population with genetically different and unrelated workers and drones.

Treatment-free beekeepers that are open to intervening in their colonies vary widely in their approach to dealing with *varroa* mites. Some do nothing at all for mite control and rely on honey bee genetics, natural

swarming, and perhaps a screened bottom board to combine in a way that prevents mites from causing their colonies to collapse. All too often however, their bees die out within two to three years, unless their colonies start out mite free and they are located in a relatively isolated place that restricts mite migration into their hives.

Most treatment-free beekeepers use a form of management to control mites rather than introduce foreign substances into the hive. This group is generally divided into two camps: one that trusts in colony genetics combined with highly efficient and consistent splitting of surviving colonies in order to replace and stay ahead of colony losses; the other relies on a combination of management techniques (screened bottom boards, brood breaks, culling drone brood, and rotating out old combs as well as some level of genetic tolerance) to keep mites in check. This combination of hive management approaches can result in colony-wide mite control that is just as effective as commercial treatments. This fact may negate the "mite bomb" issue that is so often the basis for the criticism directed toward treatment-free beekeepers.

I have also observed that while mite bombs may be a concern in places where bees can forage freely all year long, in the northern tier of the United States, my experience indicates that mite bombs appear to be of little to no concern. Due to the prolonged dearth of Winter and the brood break that is common in northern hives, mite levels in Spring are very low. This has proved true every time I have monitored mite levels, even when colonies have gone into Winter with high mite levels. The time of year when varroa levels in the north are able to increase to devastating levels in susceptible hives that go untreated, typically occurs in September and October, the time of year when the weather becomes increasingly unfavorable for foraging. As a colony collapses from high mite loads in Autumn, the cold weather provides few opportunities for foraging bees from surrounding colonies to

spread the mites as they take honey from weak and collapsing hives, and in the process, transport mites back to their hives. The only northern colonies that are typically at high risk of collapsing from mite infested hives (mite bombs) are those that are in the same bee yard where drifting bees and robbing foragers can easily access a hive overrun with mites even when the weather is marginally warm enough to do so.



"When a mite bomb spreads mites to all the colonies in the neighborhood, who is to blame: the owner of the colony that collapses from mites, or the receiving beekeeper that does not address the increase in mites in time to stem the damage the growth in mite population causes?"

So who are the beekeepers that are a menace to the industry? Is it those beekeepers that continue to use highly toxic synthetic chemical treatments (both legal and illegal) that contaminate beeswax and sometimes even honey, and slows down the natural evolutionary development of bees that exhibit natural mite resistance? Could it be the migratory beekeeper that transports wax moths, small hive beetles and untold numbers of bee pathogens around the country? Maybe it's those who sell and use synthetic beeswax combs (sold under the misleading trade name 'Better-Comb') that is contaminating the commercial supply of pure natural beeswax simply for the convenience of being able to buy fully drawn out frames of comb any time they want?

The beekeepers that are universally considered a true menace to their fellow beekeepers are those that fail to identify and control American Foul Brood in a timely manner: the most deadly and contagious of all the honey bee diseases. This is the primary reason why a national honey bee inspector program was developed and implemented in almost every state in the U.S. It is these beekeepers that present a clear threat to their fellow apiculturists.

Rather than being a menace to beekeepers, treatment-free beekeepers are uniquely placed to be able to experiment and take the kind of risks that larger commercial operations are uncomfortable adopting, and in doing so they provide a service to the beekeeping industry.

When it comes to being a threat to their fellow beekeepers, treatment-free beekeepers simply do not fit the bill. Even in warm southern climates where mite populations are almost constantly growing and foragers active all year making mite bombs a real threat, the responsibility is still on the colony owner, as the caretaker of the hive, to be on top of the mite problem. When we blame others for our own failure to stay on top of what is happening in our hives and keep mite levels under control, aren't we simply attempting to shift blame away from where the blame truly belongs? Is it possible that those that treat for mites really wish they didn't feel like they have to, are not really that comfortable with their practices and this leads them to take out their frustrations on those beekeepers that are doing what they wish they could do? Could it be that the real menace here are those divisive individuals who are blaming other beekeepers for their colony losses?

Pointing fingers and directing anger at others is not usually the most productive way to solve a perceived problem. In reality, when we express anger it is usually because we have become scared; in this case scared of losing all our bees. I would suggest that this blame game distracts from the pervasive toxic chemical resi-

due issues that mounting evidence indicates is the primary cause of widespread industry losses that have skyrocketed since 2006. It is also interesting to note that feral colonies present the same theoretical mite bomb problem that treatment-free beekeepers do, but they are seldom the target of blame or criticism.

Rather than point fingers and place blame, it would be better to remember that everyone is always doing the best they can - there are no bad guys here - we are all wearing white hats (or white veils as the case may be). Every beekeeper loves their bees and tries to provide for them the best they can in their own unique way based upon their life experience and personal limitations. We also need to keep in mind that a person's best is constantly changing with their level of knowledge; the amount of time and other commitments they have that may distract from timely bee management; their personal state of health; the level of financial pressure and solvency they are experiencing, and their beekeeping goals among other things. It is unfortunate that for some, the best they can do at this challenging point in their beekeeping journey is to accuse others of making things more difficult for them.

"The best way to keep bees" should not be about tradition, ideology or some one-size-fits-all best management practice, but about respecting biology and evolution, showing consideration for a colony's natural instincts, and honoring the personal philosophy, beliefs goals and abilities of the beekeeper who is responsible for the bees.

"Beekeepers in northern regions are rarely impacted from mite bombs since the time when mite populations typically grow so large they cause colonies to collapse coincides with the time of year when few opportunities exist for foragers from other hives to drift to or rob out collapsing hives."







Can you imagine what it was like when Rev. Langstroth's hive became popular in the beekeeping community? Or in 1873, when Moses Quinby introduced the bellows-type smoker we still use today? H.C. Boardman came up with the entrance feeder in the late 1800s, and that's why many of us refer to it as the Boardman feeder. Even the idea of the Flow Hive was kicked around in the early 1900s.

For those of us who have been keeping bees for a while, it's been exciting to witness the introduction of so many innovative and helpful tools in beekeeping. I could make a list a mile long of all the new tools and equipment that have revolutionized beekeeping—from specialized equipment, hives, treatments, and protective gear, all the way to practically self-sufficient bee hives that are so advanced they can actually care for the bees without the need of a beekeeper.

Nearly twenty years ago, I wrote an article about using a queen pushin cage as an effective method for introducing a new queen to a hive that persistently rejects her. My article went into great detail about how to make the cage out of 1/8" hardware cloth, as you can see in the picture. At that time, I mentioned that perhaps in the future someone would make and sell plastic push-in cages. Finally, plastic ones are everywhere. They are much easier to use and serve many purposes, including helping to control mites by temporarily caging the queen, breaking her brood cycle, thus breaking the brood cycle of the mites.

Have you ever sat around like me and dreamed of all the things that could and should be invented? For starters, I want to invent a small box or cage that you can slip into a hive between frames and, in less than thirty minutes, the queen safely walks into the box and is temporarily held in that trap. Stay with me! It's not all that impossible. Think of the ramifications. Before every inspection, you could slip the box in, come back in thirty minutes, and just like that-no more searching for your queen. Plus, you can set her aside while you do your inspection. Has your hive be-

## What's the Next Big



come too aggressive to replace the queen? Slip this box in. She's caught and now easier to replace. Worried about the hive swarming and needing to trap your queen? Slip in the box. I've actually played around with several concepts, odors, lights and boxes, but no luck yet. But if I nail it, you'll love me forever. Go ahead, see what you can come up with.

Now, this one sometimes keeps me up at night. Years ago, I was touring a beekeeping facility in the Northeast with the late EAS master beekeeper Billy Davis. He pulled me aside and took me over to a large indoor observation hive. "David, watch this." He wetted his finger and slid it down the glass of the observation hive, creating a unique high-pitched sound — similar to the sound you make when you rub the top of a crystal glass filled with water. Immediately, and incredibly, all the bees froze as if they were dead. They stayed that way for several seconds even after the sound ended. Seriously, not a single bee moved at all. As soon as I got home, I went to work to figure this out. I used various sound devices, recordings, and vibrations. I even set up large speakers over the opened hive and played all kinds of sounds and music, from classical to rock, and I just can't make it happen. However, in my observation hive, with a wet finger, I can create the noise, and the bees freeze. Take a look at my video link at the end of this article to see it happen. Now, this would be another dream-come-true invention in beekeeping. Imagine walking up to your hive, placing a small noise device on the top bars, turning it on, and now you can work your bees without any fear of being stung because the bees are frozen in time.

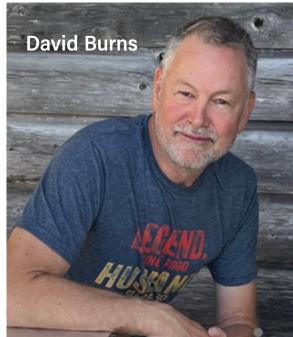
Now, it may seem silly for me to share my hopes and dreams, but I do so in the hope that someone out there will tackle these ideas with greater resources and smarts than I have. Discoveries like this will happen in the next 100 years. Imagine what beekeeping will be like in 100 years. Some inventions may happen this year or in the next few years.

Beekeepers have always been a very creative lot. After all, "Necessity is the mother of invention." We have better tools, equipment, and management skills due to necessity. Be

inspired to invent or create the next big breakthrough in beekeeping.

To watch my video of my sound making bees freeze, check out my video at: https://www.honeybeesonline.com/davids-youtube-channel





## Invention?

February 2025

BEE CULTURE





## QUALITY QUEEN BEES

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Paradise VSH Italian Carniolan / VSH Italian hybrid

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A VSH Mother mated w/Kona Italian drones

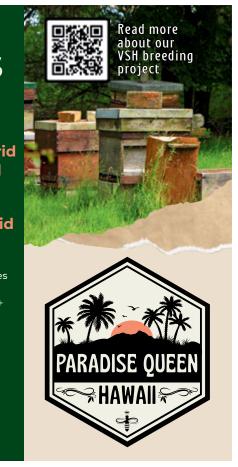
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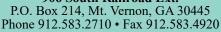
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1-9\$23.75	#3	103.75	101.75	99.75	97.75
10-24\$22.25	#4	119.25	116.75	115.25	113.25
25-UP \$22.00	NO NUCS THIS SEASON				

## RUSSIAN HYBRID QUEENS & PACKAGES

<b>QUEENS</b>	PKGS.	<u>1-9</u>	<u>10-24</u>	<u>25-99</u>	<u>100-UP</u>
1-9\$26.25	#3	106.75	104.75	102.75	100.75
10-24\$24.50	#4	122.25	120.25	118.25	116.25
25-UP\$24.25	NO NUCS T	HIS SEASON			
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## BUILD A BETTER BEE RESENVATION **Ed Simon**



It worked! In a previous session (Build a Better Bee Presentation -Part 6A), we created an article using AI. Now we would like to use AI to create a matching presentation.

Here is an example of how you can use AI to create this presentation using the same AI request we used to develop a presentation.

The same restrictions apply to creating this presentation as creating the article.

- 1) This is an example of using AI output without, and I repeat WITHOUT checking it for correctness. Minimal changes are made to convert the output into a presentation.
- 2) Microsoft's Copilot®□ is used to generate the output for these examples.

Note: Free AI applications are available for your use at the following locations.

ChatGPT - Chat.openai.com -Direct access to ChatGPT2

Copilot - copilot.microsoft.com -Direct access to Copilot

## Create the presentation (Part 6B) Step 1: Develop and save your premise.

For this example, we will use the following request to AI. It is the same request used previously to create an article. The only change was to request a presentation, not an article.

"Create **a presentation** about the mating flight of a queen bee. Include footnotes".

**Step 2:** Ask AI to develop the presentation based on your request.

The steps needed to produce an AI generated presentation using Copilot are:

Step 2a: Start Copilot

It is available on the Internet at:

https://copilot.microsoft.com/ or you may find it on the taskbar on the Windows 11 display.

Step 2b: Enter your request. Then click on "Submit".

The following statement was used as the request for this article.

"Create a presentation about the mating flight of a queen bee. Include footnotes".

Step 2c: Save the returned text from AI.

Copy the AI output into the document "AI Presentation Request Output". Save this new document on which the presentation will be based. Ref: See Attachment - AI Presentation Request Output for this example's saved information.

## Checkpoint

You are now ready to create a presentation using the AI Presentation Request Output, as an outline and using the previously created article to flesh out the details (notes page).

## **Step 3:** Create a Presentation.

Use the skills to create a slide with the basic look for your presentation.

When you are satisfied, make multiple copies of this slide. Create one slide for each main topic identified in the AI output using the AI identified items as the slide headings and the sub items as the text.

Step 4: Merge the information from the article.

Use the information and pictures you had previously created for the article in Part 6A to flesh out the details. 1)Add the information from the corresponding article page to the notes page of the slide. Be sure to keep the footnotes associated with the text. Most of the time for an informal bee presentation, footnotes would not be required. But protect yourself, have them available for reference in case someone challenges your slide.

2)Use any additional information

from the article to enhance the wording on the slide.

3) If a picture or pictures are available in the article, use them on the slide.

## **Step 5:** Finish the presentation.

Add a title page with the name of the presentation and identifying you as the creator with the help of AI. Add your standard Thank You slide to end the presentation.

**Step 6:** Backup your presentation.

It has taken work to get this far, do not lose your work.

## **Step 7:** Give your presentation.

After having created a presentation by using the current AI output and then merging into it the previously created article, the presentation is ready to be given to your local bee club.

Note: If you would like beekeepers beyond your local bee club to enjoy your work, submit your presentation to SEMBA for possible inclusion in their library.

See the submission requirements

for items to be included in the library at: https://www. sembabeeclub.com/ library/information



The creation of a presentation from an AI request and using a previously developed article from the same input, turned out to be a snap compared to creating the entire presentation from scratch.

Note: The completed article and the PowerPoint® presentation are available on the SEMBA website in ready to use downloadable form. Look for it under the Presentation category.

## Thoughts:

Why couldn't you use AI to create a presentation from any existing article by using it as input and not creating a new AI request. I tried this and it works.

- 1) Place the machine-readable article in a document.
- 2) Add the AI request in front of the article. The combined AI request will look like this: "Create

<sup>&</sup>lt;sup>1</sup>Copilot is a generative artificial intelligence chatbot developed by Microsoft.

<sup>&</sup>lt;sup>2</sup>TChatGPT is a free Open-Al chatbot.

a presentation from the following information." (The complete article goes here).

Note: There is a limit on the number of characters AI (Copilot) will accept for input which will limit this option. Perhaps you could break the request into sections/requests to get around the problem.

## **Attachment - AI Presentation Request Output** AI Request to create a presentation:

"Create a presentation about the mating flight of a queen bee. Include footnotes."

## Copilot response:

Sure thing! Here's a detailed presentation on the mating flight of a queen bee:

**Note:** The following was copied directly from the AI output. For illustrative purposes, each slide heading is identified in bold. The bulleted items are used as the text.

## The Mating Flight of a Queen **Bee Introduction**

Understanding the mating flight of a queen bee is essential to comprehending the lifecycle and survival of a honey bee colony.

## Virgin Queen and Nuptial Flight

- · Virgin Oueen: Shortly after emerging from her queen cell, the virgin queen bee prepares for her nuptial flight, usually within a week.1
- · Nuptial Flight: This flight ocurs under warm, calm weather conditions, which are optimal for the queen's journey.1

## **Drone Congregation Areas**

- · Drones Gather: Male drones head to specific areas, known as drone congregation areas, in anticiption of the queen's arrival.2
- Encounter: The queen navigates to these zones, triggering the start of her mating chase.2

## The Mating Process

- Highpeed Chase: A thrilling chase ensues; only the swiftest and strongest drones mate with the queen.3
- Multiple Mates: The queen mates with about 10-20 drones during the flight, ensuring genetic diversity.3

## Aftermath for the Drones

Drones' Sacrifice: Post-mating,

drones face a grim fate as their reproductive organs are torn from their bodies, leading to their death.4

Sperm Storage: The queen stores sperm in her spermatheca, an organ that keeps sperm viable for several years.5

## Return and Reign

- Back to the Hive: After her nuptial flight, the queen returns to the hive to begin her reign, using the stored sperm to fertilize eggs.6
- · Laying Eggs: She can lay thousands of eggs daily, crucial for the hive's growth and productivity.6

## Conclusion

The mating flight of a queen bee, though brief, has lasting implications for the hive's genetic diversity and future success.



## **Attachment - Completed Article:**

The Mating Flight of a Honey bee by AI and Ed Simon

(A Fascinating Ballet)

The life of a honey bee colony hinges on the successful mating flight of its queen. This extraordinary event, filled with high drama and significant consequences, ensures the future vitality and genetic diversity of the hive.

## The Virgin Queen's Preparation

A few days after emerging from the queen cell, a virgin queen prepares for her nuptial flight. This is the only time



<sup>1</sup> Winston, M. L. (1987) The Biology of the Honey Bee. Harvard University Press.

<sup>2</sup>Koeniger N., Koeniger, G., Pechhacker, H. (2005). The Importance of Drone Congregation Areas for the Mating of the Honey Bee Queen, Apidologie. <sup>3</sup>Page, R. E., & Peng, C.Y. (2001). Aging and Development in Social Insects. Springer. <sup>4</sup>Gary, N. E. (1992). Activities and Behavior of Honey Bees. Honey Bee Management. <sup>5</sup>Harbo, J. R. (1979). The Rate of Sperm Loss

Research. 6Seeley, T. D. (1985). A Study of Adaptation in Social Life. Princeton University Press.

in the Honey Bee Queen. Journal of Apiciltural

If there's more you need or another topic you're curious about, just let me know! 🐙

in her life she will leave the hive for this purpose. Warm weather and favorable conditions are critical for her success.3

## The Search for Drone **Congregation Areas**

Queen bees instinctively fly to



drone congregation areas, where male drones gather in large numbers. These areas located several hundred meters from the hive, are pivotal

locations for mating.4

## **High-Speed Aerial Chase**

In the drone congregation area, the queen's pheromones a swarm of drones. A high speed aerial chase ensues, with the queen leading her

suiters on a rigorous flight. Only the fastest and fittest drones succeed in mating with her. The queen mates with approx-



imately 10-20 drones during this flight.⁵

### The Sacrificial Act

For the drones, mating is a fatal act. After mating, a drone's reproductive organ is torn from his body, resulting in his immediate death. This sacrifice ensures that the queen

has ample genetic material stored in her spermatheca, a specialized organ capable of keeping sperm viable for several years.6



## Return to the Hive

Once her nuptial flight is complete, the queen returns to the hive, (3) She will use the sperm to fertilize



eggs throughout her life, laying thousands of eggs daily to ensure the colony's growth. The genetic di-

<sup>&</sup>lt;sup>3</sup> Winston, M. L. (1987) The Biology of the Honey Bee. Harvard University Press.

<sup>&</sup>lt;sup>4</sup>Koeniger N., Koeniger, G., Pechhacker, H. (2005). The Importance of Drone Congregation Areas for the Mating of the Honey Bee Queen. Apidologie. <sup>5</sup>Page, R. E., & Peng, C.Y. (2001). Aging and Development in Social Insects. Springer. 6Gary, N.E. (1992). Activities and Behavior of Honey Bees. Honey Bee Management. <sup>7</sup>Seeley, T. D. (1985). Honeybee Ecology: A Study of Adaptation in Social Life. Princeton University Press

versity obtained from multiple drones enhances the hive's resilience and vitality.<sup>7</sup>

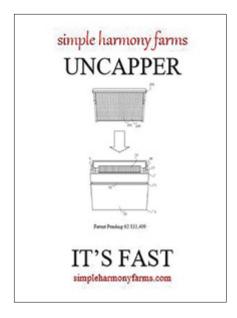
## Conclusion

The mating flight of a queen bee is a brief yet critical event the influ-

ences the entire future of the hive. This natural phenomenon highlights the remarkable adaptions and behaviors evolved by honeybees to sustain their colonies.

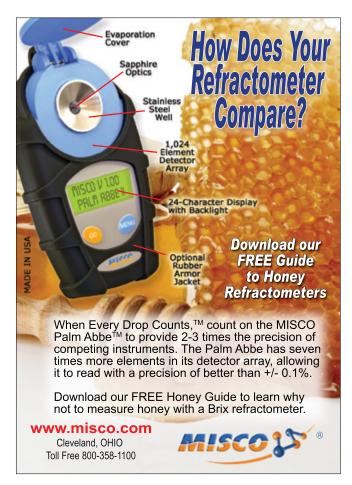
**Note:** This article is used to show how AI can help you develop and

article and build a subsequent presentation. All the text in this article was generated using AI. **No** validity checking of the text was attempted.





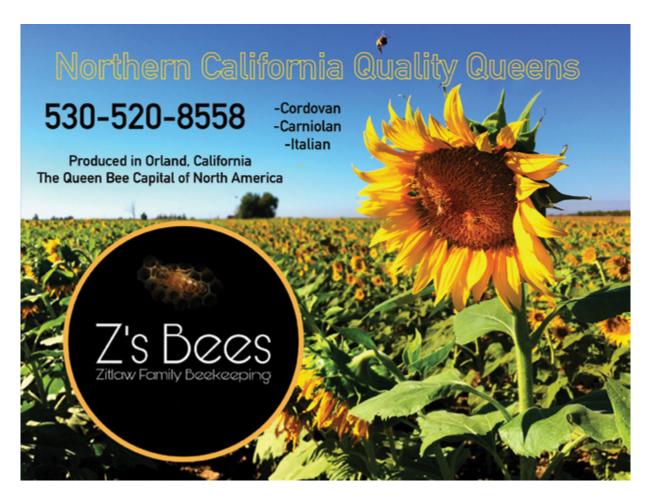


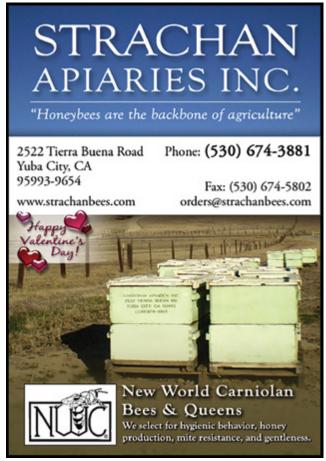














## Bees Know Social Distancing: Increase Hive Spacing to Reduce *Varroa* and Viruses



Listen along here! https://www.beeculture. com/bees-know-social-distancing/

Beekeepers are well-aware that the parasitic mite, Varroa destructor, is "... the greatest biotic threat to honey bees" (Dynes et al., 2019, p. 2). The best available

science recommends practicing integrated pest management (IPM) to combat Varroa. IPM means employing multiple actions to reduce Varroa in as many ways as possible, thereby reducing parasitic and viral damage, thresholds are exceeded less frequently, and treatments are needed less often.1

One non-chemical IPM action that reduces Varroa and virus transmission is to increase colony spacing and differentiate hives.

## Far Apart and Low Density

When swarming and choosing their new home, colonies space themselves far apart and with low density. At least eight peer-reviewed studies from different countries surveyed rural and natural settings to quantify distance and density of non-managed colonies. These studies show that colony density is low, with three colonies per square mile or about one colony per 250 acres. Colonies space themselves far apart as well, approximately 2,500 feet from each other. Researchers postulate colonies maintain low density and spread themselves out to optimize survival in multiple ways, such as reduced drift and horizontal pathogen transmission, reduced robbing, and reduced competition for forage.2

Drift is when a worker or drone enters a colony that is not her or his own. Drift increases the likelihood of horizontal pathogen transmission. In a superorganism such as a colony of honey bees, horizontal transmission means the pathogen from one colony is transferred to a different colony. Horizontal transmission is a survival strategy that favors pathogen virulence. Because the pathogen transfers to a new host colony, the pathogen survives even if the patho-

gen kills the original host colony. Through a combination of drift and robbing, Varroa easily disperses from a collapsing, dying colony to a new colony. Multiple studies show this leads to stronger Varroa, not stronger bees.3

While research varies on the median distance foragers fly to collect nectar and pollen, the accepted distance is within about a 2-mile radius from the hive. Less densely packed colonies translate into more forage available for the fewer colonies. When colonies are too densely packed, competition for limited resources increases so that there is less nectar and pollen available per colony, reducing overall foraging efficiency and ultimately, survival.

## Ancient Egyptian Apiary



Figure 1. Since ancient times, beekeepers have spaced hives close together. The red box shows the beekeeper smoking nine horizontally stacked hives. Recently, researchers have determined that closely spaced hives reduce colony health.

## **Conventional Apiary Design**

Most beekeepers are taught to place hives a few feet apart on hive stands (Figure 1). Hives are often painted white with entrances facing the same direction. In addition, some beekeepers maintain a high density of colonies, with 25-100 colonies in a tightly packed apiary. Beekeepers keep colonies close together in apiaries because it is more practical and convenient for the beekeeper.

One study showed that traditional apiary settings facilitate up to 40% of workers to drift into other colonies, enabling contagious pathogens—such as European foulbrood, American foulbrood, chalkbrood, and Vairimorpha (Nosema) ceranae, Varroa, and viruses — to transfer from one colony to another.

## Theresa J. Martin



Figure 2. Painting boxes with assorted colors and shapes can reduce drift, reduce Varroa and virus transfer between colonies, increase survival, and increase honey production.

## Practice to Increase Bee Health and Productivity

Especially for the hobbyist, beekeepers can space hives farther apart, distinguish them using color, and position them with entrances facing different directions (Figure 2). A bee's eyesight is excellent at discerning shapes and colors, so differentiating hives can reduce forager and drone drift, and queen loss. Bees orient using landmarks, such that entrances facing different directions enable returning bees to more reliably locate their colony.

One study combined these suggestions and found significant health advantages: three times lower forager drift, lower Varroa levels in brood, greater honey production, and reduced overwinter mortality (Figure 3).4 Another study compared traditional and dispersed arrangements and found significant health advantages in the dispersed arrangement: 35% lower drone drift, lower Varroa infestations, and significantly higher survival (Figure 4).5 Studies show that hives spaced just 100 feet apart on opposite corners of a suburban yard can reduce drift and Varroa loads.6

## Study 1: Health advantages of increased spacing (Dynes et al., 2019) Traditional Apiary: 1 meter apart, in a line, white, entrance facing same direction Dispersed: 10 meters (33 feet) apart, in a circle, entrances facing out, different colors Significant health advantages 3 times lower forager drift Lower mite levels in brood Greater honey production Increased overwinter survival

Figure 3. Dynes et al. (2019) conducted a study comparing a traditional apiary and one with hives painted different colors, placed in a circle, with entrances facing outwards. The study found significant health benefits in the visually complex apiary design.

## Study 2: Health advantages of increased spacing (Seeley, Smith: 2015)

## Significant health advantages

- Lower drone drift
  - Traditional apiary 35%
  - Dispersed hives 0%
- Increased survival
  - All colonies died in traditional apiary
  - 5 colonies survived in dispersed setting
- Lower mite infestations in dispersed hives

Figure 4: Seeley and Smith (2015) conducted a study comparing a traditional apiary and one with dispersed colonies and found lower Varroa infestations and higher survival in the dispersed colonies.

Figure 5: Placing colonies on the corners of a suburban yard has been shown to reduce drift and increase health, survival and productivity. The additional set of cinder blocks next to each hive provides a seat for me to observe the entrances, and a table to use during inspections.



## My Implementation

My first criterion when selecting a location for my bees is how far apart I can space my colonies. I keep 20–25 colonies in four locations, with no more than 11 colonies per location. In my suburban locations, I place colonies 100 feet apart on opposite corners of the homeowner's yard (Figure 5). In addition, hives are painted different colors to help the bees distinguish between them.

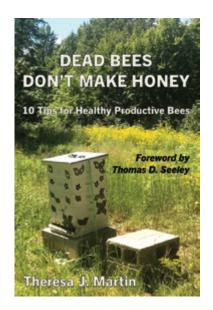
I observed the benefits of increased colony spacing and low density while participating in the USDA APHIS National Honey Bee Survey. The Kentucky state apiarist, Dr. Tammy Horn Potter, took samples from my colonies for pathogen analysis. One of my colonies had been struggling with chronic bee paralysis virus (CBPV) (Figure 6). Dr. Potter commented that the distance between my colonies was likely a factor in limiting CBPV to only one colony, as no other colony showed clinical signs.

## **100 Feet Apart Matters**

Dr. Thomas Seeley (2019) writes in The Lives of Bees that "... spacing colonies just 30-50 meters (100-160 feet) apart greatly reduces the likelihood of drifting of drones - and probably also workers — among colonies and thus the spreading of diseases" (p. 287). Increased space between hives reduces the damage caused by Varroa, viruses and other contagious pathogens, and improves the health and productivity of our bees. BC

Figure 6: Two dead bees with chronic bee paralysis virus from one of my colonies. Increased space between hives limits inter-colony pathogen transfer and is likely part of the reason why only one of my colonies showed clinical signs of illness.





Theresa J. Martin is the author of Dead Bees Don't Make Honey: 10 Tips for Healthy Productive Bees, which includes a Foreword written by Dr. Thomas Seeley. Theresa has achieved 99% colony survival and honey production that is above the local average in her six years as a beekeeper, with 20–25 colonies in Kentucky. She is a Cornell Master Beekeeper, 2024 Kentucky State Beekeeper of the Year, and Vice President of the Kentucky State Beekeepers Association. Theresa can be reached at theresa@littlewolf.farm

## References:

'The Honey Bee Health Coalition provides outstanding Varroa and integrated pest management resources. Honey Bee Health Coalition. (2022). The guide to effective Varroa sampling and control. https://honeybeehealthcoalition.org/wp-content/uploads/2022/08/HBHC-Guide\_Varroa-Mgmt\_8thEd-082422.pdf

<sup>2</sup>Seeley (2019) provides a table on page 41 summarizing eight studies conducted worldwide that demonstrate low colony density when colonies are choosing their own home. Seeley, T. D. (2019). The Lives of Bees: The Untold Story of the Honey Bee in the Wild. Princeton University Press.

<sup>3</sup>Multiple research papers describe horizontal pathogen transmission for honey bees, *Varroa*, and the viruses *Varroa* vector.

Dynes, T. L., Berry, J. A., Delaplane, K. S. de Roode, J. C., Brosi, B. J. (2020). Assessing virulence of *Varroa* destructor mites from different honey bee management regimes. Apidologie, 51, 276–289. https://doi.org/10.1007/s13592-019-00716-6

Forfert, N., Natsopoulou, M. E., Frey, E., Rosenkranz, P., Paxton, R. J., Moritz, R. F. (2015). Parasites and pathogens of the honeybee (*Apis mellifera*) and their influence on inter-colonial transmission. PLOS ONE. https://doi.org/10.1371/journal.pone.0140337

Ingemar, F., Scott, C. (2001). Implications of horizontal and vertical pathogen transmission for honey bee epidemiology. *Apidologie*, 32(3), 199-214. https://doi.org/10.1051/apido:2001122

\*Dynes, T. L., Berry J. A., Delaplane K. S., Brosi, B. J., de Roode, J. C. (2019). Reduced density and visually complex apiaries reduce parasite load and promote honey production and overwintering survival in honey bees. PLOS ONE, 14(5): e0216286. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0216286

<sup>5</sup>Seeley, T. D., Smith, M. L. (2015). Crowding honeybee colonies in apiaries can increase their vulnerability to the deadly ectoparasite *Varroa destructor*. *Apidologie*, 46, 716–727. https://doi.org/10.1007/s13592-015-0361-2

On pages 259-263, Seeley (2019) summarizes the science related to natural colony spacing advantages, horizontal transmission, and his 2015 research. On page 287, he applies this research, offering suggestions for increased colony spacing.





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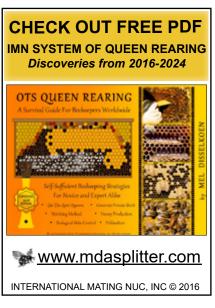












## BEHIND THE SCENES

## -GATHERING AND PROCESSING HONEY That Pretty Jar on the Shelf is Deceiving





## There is no "Light Honey"

An irrefutable characteristic of honey is that it is heavy—nearly twelve pounds per gallon. There is no negotiating this characteristic. Lifting honey, in any form, requires back-breaking labor or expensive machinery.

Unprocessed honey is heavy in the supers. Frames full of honey are heavy during the extracting process and finally, honey is heavy in jars or buckets – not to mention 600-pound drums. We can control mites. We can maintain good queen stock. We can have all our hives facing east (or south). We can do many things in beekeeping, but we cannot make our bees make "light honey".

A second irrefutable honey fact is that it is sticky and seems it end up on everything – even clinging to Teflon non-stick pans. Hands, shoes, floors, steering wheels and tabletops are all common places where honey is clearly sticky. Seemingly, any second-grade elementary class in a show-and-tell session, can take just a bit of honey and effectively cover all flat surfaces within the room.

Honey is hardy. It stores well and it resists molding or souring. That's good. Anything heavy and sticky needs an occasional positive attribute.

Honey is sweet. Every human on planet Earth, and many animals, knows this characteristic of honey. It was sweet long before we managed to concoct granulated sugar or squeeze maple syrup from trees.

There it is. Honey is heavy and sticky, but it is a stable, sweet product

that is consistently in high demand. Beekeeping humans have spent eons trying to accumulate as much honey as possible. During that time, we have developed efficient techniques for coercing honey from its rightful owners – honey bees. We should have the system down pat by now. *Yeah right.* There are plenty of problems that can spring up in the best honey production and processing procedure. For your review, I have selected a few of occasions to discuss in this piece.

## I got a good honey crop, but it has granulated in the combs before I could extract it.

Well, you can jack up the speed of your extractor just about as high as you want but that crystallized honey will never sling from the combs. Honey from some crops, such as canola, granulates quickly. There is nothing you can do except extract it as soon as the honey is capped. Then, rather than crystallizing in the comb, it will granulate in storage, but at least you can reliquefy it as needed either for selling or consuming.

What to do with crystallized combs? Give it back to the bees. They made it, let them worry with it. They will use it, somewhat wastefully, to produce more bees. Using crystallized combs for making splits, feeding to wintering colonies, or getting swarms off to a good start, are common uses for solidified honey. Such solidified honey is not a great food source, but the bees will use it and it somewhat attractive to needy bees.

Figure 1 Some extraction of granulated honey is okay. However, less is better.





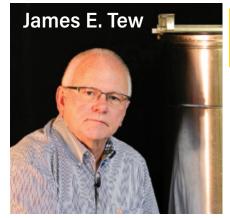
Figure 2 Professionals taking care of granulated honey.

## I got hot and tired so I left a lot of bees in the supers. I tried to bounce the supers on the ground to jar the bees out.

Broke a lot of frame top-bar lugs, didn't you? A deep frame of honey can weigh as much as nine pounds. Banging deep supers on the ground to dislodge bees frequently breaks the frames along the top bar ends. This is such a common occurrence that bee supply companies sell metal repair parts to put the broken frame back into production. No great riddle here. To prevent frame breakage, don't bounce full supers on the ground. Yet another option – use plastic frames.

Figure 3 Yes, I have broken lugs, too. Using a piece of expired car plate, I repaired this one, but I don't think it was worth it. Bee Supply outlets offer lug repair parts.





## I put on traditional Porter Bee-Escapes on the inner covers (just like the book instructed), but when I returned to remove the crop, bees were robbing everything.

It happens. Honey is normally taken from the bees after the crop is over, ergo a nectar dearth is underway. If you don't seal all the broken corners and cracks of the supers you plan to remove, marauding bees will find their way back into the undefended supers and re-appropriate the crop. Anytime you plan on using a bee removal device that requires a second trip to the outyard, be certain that all other entrances are blocked. Secondly, hope for cool weather that will require bees to move down toward the brood nest out of the supers. Even on the best of occasions, you will probably need to brush out the remaining bees with a bee brush (an event the bees just love).

## I used a commercial product containing butyric anhydride to remove the crop. Now my truck smells terrible.

This type of produce is an excellent repellent. Smelling a bit like a skunk, it drives neighbors, relatives, spouses, and family pets, from the area. This stuff is notoriously smelly. De-scented forms are available.

Normally, when removing honey, you are hot and irritable. Bees are numerous and are prone to sting. Your normal impulse is to use more of the product and to work too fast. Wrong, wrong. Use the product judiciously and don't get it on anything but the fume boards you are using. Give it time to work. Upon arriving at the extracting room, let the supers air out for a while before beginning to process the crop. You should also bathe regularly.

## I left a lot of bees in the supers. I thought a would just blow them off on the way home.

Bad move. Honey is a hardy product, but by exposing the crop to dust and dirt on the ride home you effectively allowed the product to become a bit contaminated – possibly even gritty if conditions were dusty enough. Cover the supers before traveling. It is also important to attach the tops to the supers so they won't go sailing off on the trip home. Some personal experience here.

I was hauling a load home some years ago and watched in transfixed

horror in my rear-view mirror as a top sailed off the load, bounced once and then lodged beneath an Audi that was passing me in the left lane. Sparks were flying from the top as it dragged along under the car. I vividly remember trying to make small talk with the driver after we had both stopped and I had retrieved my hive cover. Bees were buzzing all about. The other driver was frightened – both from the bees and from the experience. The driver was strangely agreeable and tolerant considering all I had just put him through. It was not a good day for me.

A big honey crop is the goal of every beekeeper. Bee books are filled with instructions describing how to get the best crop, but little is ever said of the requirement that you, the beekeeper, will be required to pick up heavy, sticky, boxes – each having small handles and weighing 65-95 pounds and filled with testy bees.

There's no getting around it. Honey is heavy and sticky. Bees are everywhere stinging you, getting stuck in honey, or flying about in great confused clouds. You ache all over. Your hands, back and fingers hurt. Your gloves are wet and sticky and you constantly review exactly what it was that first lured you to beekeeping. Then you consider the alternative – what if all these boxes were empty?

## I knocked off for lunch. When I returned, I found that my filter had plugged up and honey was all over the settling tank and the floor.

Then in the extracting room, a new set of challenges awaits you. The biggest issue here involves something stopping up, something running over, or something bursting. You find yourself with honey in all the wrong places – usually the floor. Commercial beekeepers have stories of hundreds of pounds of honey running onto the floor. There are no easy solutions. Extracting facilities – all the way from a kitchen table to a full-blown extracting plant- have unique characteristics that should work well, but when they don't, a messy situation usually results.

Processing honey is a bit like painting a house. First thing, get paint all over you, then you can paint efficiently. Processing honey is a heavy, sticky business. You should realize that extracting, by design, is a messy business. Have copious amounts of water nearby and be prepared to be

constantly cleaning. Never forget that the honey in lines, filters, or sumps can be enough to overwhelm your system when left unattended. What to do with spilled honey? Honey is tough to abuse, but you must always keep the customer, and your reputation, in mind. If you won't eat it, then don't sell it to someone else. Once the honey gets away from you, be prepared to use if only for bee feed. All beekeepers have cans of such honey. The bees can readily use it for developing brood populations.



Figure 4 Spilled honey is always bad news. Just clean it up as best you can.

When I was still working at Ohio State, I had a newspaper reporter tour the extracting lab. Things were neat and clean - except for the perfunctory containers of broken combs and spilled honey. I thought nothing of it. She asked in a high-pitched voice, "What is this stuff?" to which I responded, "That's just junk honey." I then went on to explain how there is commonly spillage and waste in the processing procedure and that such honey was commonly given back to the bees during warmer months. The article came out within a few days appearing as though it has been an in-depth discussion on "junk honey" and its uses. The term must have been used ten times. I have never used the terminology, junk honey, again. I suppose extracting honey is like making sausage. There are some things people just don't want to see.

## After getting back to the extracting house, I have found that a good deal of the frames are not capped. I am planning just to extract that and mix it with the capped honey.

I need to know how much honey is a "good deal" of honey. If you allow the overall moisture content to rise above 18.6% moisture, there is a good chance that fermentation can occur in your stored crop. You can find yourself with gallon upon gallon of low-grade honey vinegar in swollen plastic containers or leaking jars. Consider setting aside those frames that are only half capped. Give them back to the bees to finish capping or extract the thin honey separately and feed it back to the bees.



Figure 5 Small amounts of uncapped nectar are okay. This frame is good to go to the extractor.

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## I like to give the bees a treat so I let them rob out the wet supers after I extract.

It's not worth the risk for so small a "treat". There are only a few ounces of honey involved. There are risks of spreading disease or of robbing getting out of control. During a dearth, literally hundreds of thousands of bees can be attracted to the odor of exposed wet combs. Common procedures such as smoking the roaming bees will no longer work. Your neighbors or occasional visitors will be subjected to hordes of out-of-control bees. It's just not worth the risk.



Figure 6 At the time, it seemed to be a good idea. This is a quick way – but not a good way – to get supers and frames dried.

## Just another beekeeping dream

All beekeepers have, at one time or another, dozed off dreaming of full supers of capped honey with the smell of fresh honey from nature's larder filling the air. The hum of extractor sounds like money being made. In reality, a heavy honey crop is a conundrum – it's great to have, but it means a lot of work (Just like catching too many fish). Be prepared for hot, tiring work with sticky honey and disoriented bees covering the extracting room windows. Be prepared for equipment failures and leaking fittings. Especially, be prepared for clogged filters.

However, once the crop is all neatly stored in clean containers and your professional label shows the pride of your craft, it will all be worthwhile. You'll be making plans for next year's big crop with no thought of the requisite pain. It's all part of the business.

Dr. James E. Tew Emeritus Faculty, Entomology The Ohio State University tewbee2@gmail.com





## **Bittersweet Chocolate Raspberry Truffle Cupcakes**This recipe is from the National Honey Board

https://honey.com/recipe/bittersweet-chocolate-raspberry-truffle-cupcakes

**Bake:** at 350°F **Time:** 18-22 minutes **Yield:** 8 servings

## Ingredients

- □ 8 oz. 60 % cocoa bittersweet chocolate, divided
- □ 2 cups unbleached all-purpose flour
- □ ½ tsp. baking soda
- □ ½ tsp. baking powder
- □ ½ tsp. salt
- □ ½ cup butter, softened
- □ ¾ cup honey
- □ 2 large eggs
- □ 1 cup buttermilk
- □ ½ pint raspberries

## **Directions**

Step 1

Preheat Oven to 350°F

Step 2

Cut 2 oz. of chocolate into 18 pieces; set aside.

## Step 3

Place 6 oz. of coarsely chopped chocolate in a microwave-safe dish. Microwave 30 seconds on high; stir well. Microwave 30 seconds more on high and stir until all lumps are gone. If more microwaving is necessary, microwave in 10-second increments and stir until all lumps are gone. Chocolate should not become too warm.

## Step 4

Sift together flour, baking soda, baking powder and salt; set aside.

## Step 5

In a mixing bowl, cream butter until fluffy. Add honey and melted chocolate; mix well. Add eggs, one at a time.

## Step 6

Add half of the reserved dry ingredients to the butter mixture; mix on low until just combined. With mixer running on low, slowly add the buttermilk. Add remaining dry ingredients until just combined.

## Step 7

Place 1 T of batter in the bottom of each paper-lined muffin tin. Add one piece of chocolate and 2 to 3 raspberries to each cup. Fill muffin tins two-thirds full with remaining batter.

## Step 8

Bake 18-22 minutes, or until a toothpick inserted in center of a muffin comes out clean. Remove to wire rack; cool. Frost with **Bittersweet Chocolate Frosting**, if desired.



## **CALENDAR**

### INDIANA

Indiana Bee School XXIII will be held on February 22, 2025 at Horizon Convention Center in Muncie, Indiana. Dr. Zachary Lamas and Dan Winter will be the Keynote Speakers

Dr. Zachary Lamas received his doctorate in entomology at the University of Maryland. His talks with be on *Varroa* and the impact on our honeybees. He is the recipient of the Oak Ridge Institute for Science and Education (ORISE) from USDA.

The second keynote speaker, Dan Winter, has been keeping bees since he was eight years old and is a third generation beekeeper. Dan spends much of his time on the road between New York and Florida.

The breakout sessions include "Selecting and Breeding Your Own Bees", "Grow a Business From Hobby to Sideliner", "Sustainable Beekeeping", "Treatments for *Varroa*", "Calendar of a Beekeeper", and "Collecting Pollen".

In addition to the educational sessions, we'll have our raffle, live auction and silent auction again. Many vendors will be on-hand with a variety of products and supplies for both show and to purchase.

The cost to attend is the same as it's been for several years now: \$50 for members, \$65 for non-members and all registrations include a buffet lunch. Our goal is to make it affordable for our beekeepers to attend. All children 15 and under are only \$25.

We will again have an all-day Beginner Class. It will be held at the same time as the conference. The cost for the Beginner Class is \$55 for members and \$65 for nonmembers and includes the buffet lunch.

Pre-registration is required for either school. The deadline to pre-register is February 16th, 2025.

We have arranged a special rate (\$119) at the Courtyard Marriot that is attached to the conference center. It's great to walk inside if the temperature is half of what it is now.

For information about location, speakers, topics, vendors, hotels and how to register, go to our website at: https://thebeekeepersofindiana.com/indiana-bee-school/

## MICHIGAN

**Kalamazoo Bee School** will be held on February 15, 2025 at Kalamazoo Valley Community College 6767 West O Ave., Kalamazoo MI.

Among the many benefits of attending Bee School are:

- · Tracks for both beginners and experienced beekeepers
- Vendors & beekeeping supplies
- Hands-on workshops
- Networking opportunities
- Giveaways
- Fun!

For more information please visit: https://kalamazoobeeclub.com/bee-school-info/

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### MISSOURI

2025 Eastern Missouri Beekeeper Workshop will be held on February 8, 2025 from 8 am to 5:30 pm at the Holiday Inn at Sunset Hills, MO and will provide instruction for beginning and experienced beekeepers. The courses will focus on beekeeping as a craft, and the biology of the honey bee as a super-organism. Speakers include: Bob Binnie, Cory Stevens, Natalee Summers, Earl Hoffman, and more to come! For ticket prices and more information please visit: https://easternmobeekeepers.com/event/2025-emba-beekeeping-workshop/

### NEW HAMPSHIRE

Natural Beekeeping: Organic Approaches to Modern Apiculture presented by OSHER Lifelong Learning Institute at Dartmouth College will be held on Saturday, March 8, 2025 from 9 am to 4:30 pm at One Court Street Lebanon, NH 03766.

Whether you're a seasonal beekeeper or just starting out, this workshop promises to provide valuable insights and practical tips that will help your bees survive and flourish. Participants will also have plenty of opportunities for Q&A. Topics covered include:

- Raising queens and bees that will survive and flourish in a world filled with mites, chemicals, and challenging weather
- · Working with colonies to solve queen problems
- · Hive survival and swarm behavior
- Effective hive management techniques for Winter survival in the Northeast
- Beekeeper strategies for alleviating pesticide and pest issues, including mites
- · Nutritional needs and strategies
- Critters and natural/organic disease treatment strategies
   The syllabus for his workshop is based on Ross

Conrad's book, Natural Beekeeping: Organic Approaches to Modern Apiculture. For more information and to register for this event visit: https://reg130.imperisoft.com/Dartmouth/ProgramDetail/313137383430/Registration.aspx

### NEW YORK

Southern Adirondack Beekeepers Association (SABA) Spring Seminar will be held on Saturday, March 29, 2025 from 8 am to 5 pm at Hudson Valley Community College TEC-SMART 345 Hermes Road, Malta, NY USA 12020

Guest speakers – Raffle– Vendors –and More! For information and updates see: **Sababees.org** 

### PENNSYLVANIA

Western PA Beekeeping Seminar will be held on February 7 and 8, 2025 at Gateway High School 3000 Gateway Campus Blyd, Monroeville, PA, 15146.

For more information please visit: https://www.beavervalleybees.net/yearly-happening-wpa-sem

### SOUTH DAKOTA

The Buzz in the Black Hills Beekeeper's Conference will be held on Friday, February 21, 2025 from 6 pm to 9 pm and Saturday, February 22, 2025 from 8 am to 4:30 pm at the Western Dakota Technical College Event Center in Rapid City, SD.

Breakfast and lunch on Saturday are included in the ticket price. Tickets can be purchased on **Eventbrite.com**.

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## BMPs FOR BEE HEALTH

A guide for beekeepers featuring Best Management Practices on safety, pesticide exposure, bee nutrition, hive maintenance, treatment of pests and disease, and more.

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## VARROA MANAGEMENT TOOL

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## Image Contest - How do you monitor Varroa in Spring?

We've started an image gallery! This month, we want to see any and all pictures you have of your **Splitting Hives** and **Making Nucs**. Please make sure that your image is nice and big! We may pick your image for the gallery, or you have the chance to get on the cover! So get creative.

## If your image is chosen:

How To Submit:

Email your images to **Stephanie@BeeCulture.com**Use the subject "**Image Gallery**"

Please include in your email:

- The image as an attachment (we will not consider it if it is embedded)
- Your First and Last name
- Your mailing address
- Your renewal code (if you know it)

For the Gallery:

You will get three months added to your current subscription. *For the Cover:* 

You will get twelve months added to your current subscription.

own at the bee yard in November, a little birdie landed on my shoulder. There was a great fluttering, and at first I thought "Hummingbird!" But in November? Shouldn't they be in Costa Rica by now? Of course it's hard to look at your own shoulder, and in an instant she was gone and I was left wondering.

Long ago from practically the same spot, I heard a great flapping and turned around to watch a bald eagle carry off a Eurasian collared dove not 50 feet from where I stood.

I see a lot of wildlife in my wanderings. Generally it's deer or elk or great flocks of wild turkeys. Occasionally it's a bear. Twice it was a mountain lion.

The late great fishing writer John Gierach opined that while angling won't fix your problems, it can help put them in perspective. That pretty well sums up my attitude toward beekeeping. When I'm with my little darlings, I experience the same serenity that I feel when I'm on the river. For fleeting moments at least, I get it that we're mortal and at the same time woefully insignificant on this breathtakingly lovely, out-of-control Earth on which our Creator placed us. And that's OK.

But this is a beekeeping magazine, not a journal of philosophy, so let's get down to business! When I called a certain respected beekeeper to explain my frustrations with high October *Varroa* mite counts following thymol treatment, she threw me a curveball. She said October counts can fool you. When bees are making honey, i.e. in the Summer, 75 to 80 percent of the mites are reproducing in the bee brood, or getting born and raised there. These mites don't show up in our beekeeper sugar shake or alcohol wash tests. But here in Colorado by October honey bee queens have drastically reduced their egg laying, and bee populations have plummeted in preparation for Winter. So by October large numbers of mites can't find brood in which to reproduce and escape testing. They're wandering around chewing on the bellies of honey bees and giving us very high mite test results.

So according to my friend, a late October 20-mite count in a 300-bee sample might not be so alarming after all. I'm not sure how you do the math on this, but maybe a hive that tests at 20 mites in a 300-bee sample in October has the same overall mite infestation as a brood-filled colony in July that tested at three mites. And I don't panic when I find three mites in July. I plot a way to reduce that mite population.

I generally get good Winter survival following an oxalic acid dribble on largely brood-less colonies in December. But that success presupposes mite counts in the single digits before the dribble. This year I had some scary mite counts in October. Did I chill out and wait six weeks to treat with oxalic?

Not me. With mites I'm twice bitten and thrice shy. I went ahead and treated with amitraz, to hopefully get me through to December, which is now. Today — December 4 — I oxalic-dribbled the 10 late-August splits in my home yard. They had mite counts mostly in the 20 to 40 range at the end of October. Today only half looked strong enough to survive the Winter.

I'm not saying my beekeeper friend was wrong about the risk to honey bees posed by high mite counts in October. I'm just telling you what happened to me.

One grim gray day last month I took my '98 Chevy pickup four-wheeling in the high country. There were six inches of partially melted snow on the half-mile track to my bee yard, so it was a little dicey. Halfway in, I chickened out, or maybe I should say my good

judgment finally kicked in. With great fanfare and an explosion of mud and ice I'd survived the big hole. Now all I needed to do was navigate it again, going the other way.

I got turned around OK. As I put a death grip on the steering wheel, I felt the mix of fear and eager anticipation that skydivers must experience. When I dropped into that mud hole my 3/4-ton took a bounce that nearly sent me through the roof, and I began to drift sideways in a most disconcerting way. I uttered an oath most foul but kept my foot in it.

Wheels spinning, I held my breath as I inched ever forward. Then suddenly like awakening from a bad dream it was over. I climbed up a stony track and headed for the barn.

You might wonder what was so all-fired important that I chose to hang it out in such questionable conditions. I'd brought the bees down off the mountain six weeks before. But I still needed to fetch the six-volt solar bear fence charger before it got buried under six feet of snow.

There's no cell service in that empty country an hour from civilization. I nearly had to spend the night in the primitive cabin down by the bee yard. I had matches, water and warm clothes. I'd bet money there's a can of Dinty Moore beef stew in the cabin cupboard and a sleeping bag in there somewhere. Sooner or later the gal Marilyn would surely rescue me.

Call me crazy. I know I shouldn't, but I sometimes take chances. I can't give you a good reason. It's just the way I roll.

Gentle reader, did you find this poor epistle amusing, heartwarming, instructive? Contact Ed Colby at Coloradobees1@gmail. com. Ask him to promptly mail you an autographed copy of A Beekeeper's Life, Tales from the Bottom Board – a collection of the best of his Bee Culture columns. Price: \$25. Satisfaction guaranteed or your money back!

## The Way I Roll

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