# IS BEEKEEPING RELEVANT?



# Wilbanks Apiaries, Inc. Claxton, Georgia 912-739-4820

The Wilbanks family's 76 years of queen-breeding spanning over 5 generations of beekeeping along with a tenured, dedicated workforce produce quality queens with ALL the desirable traits needed by the commercial beekeeper:



Highest sperm count & sperm viability = longevity of egg production (our queens score an "A" in NCSU Queen Lab testing for mating success)

- Hygienic behavior = lower mite levels
   = lower virus load
- Hardy survivors of stressful conditions
- Gentle temperament
- Diverse Italian pedigree



Ask about our Summer & Fall discounted prices.

**Available until November** 

Call today to order the BEST QUEENS MONEY CAN BUY! Wilbanks Apiaries, Inc. 912-739-4820

Located in Claxton, Georgia



**FOR ALL YOUR** BEEKEEPING NEEDS

www.Pierco.com



#### **AgriSea** Bee Nutrition

- Essential Amino Acid Profiles
- Individual Bee Mass (weight) Improved
- Reduction of Nosema
- No Residues in Honey
- Nutrients Sustaining Cell Metabolism



**Exclusive** Supplier of AgriSea



#### MITE CONTROL TOP FEEDERS

**EXTRACTION** 







**BEEKEEPING KITS** 

IN-HIVE FEEDERS

**PROTECTIVE** 





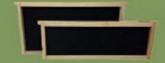


**WE OFFER DOUBLE** & TRIPLE WAX



#### Frames -**Plastic**

- Super Strong & Durable
- Safe FDA food grade plastic
- ✓ Easy to use No Assembly Required



#### Frames -Wood

- Stronger than Industry Standard
- 3/4" top bars
- Assembled, Glued, and Stapled



#### Snap-in Foundations

- Impervious to wax moths,
- Preferred by Professional Beekeepers
- Precision molded, perfect cells
- Easy to use Snaps into wood frames



#### Commercial **Grade Boxes**

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

  ✓ Added Strength 1 5/8"

  ✓ The str Top Joint

## October Bee Culture...

- **Mailbox**
- **Next Month**
- 9 **Honey Prices**
- 12 New Book Do You Speak Bee? Albert Chubak
- 13 **Book Review** Honey Bee Vet Dewey Caron
- **USDA Honey Bee Colonies** Down One Percent for Operations With Five or More Colonies
- 16 Found in Translation Stress Management Jay Evans
- 20 A Closer Look Pesticide Larval Mortality Clarence Collison
- 26 Who, What, When, Where, and How??? Study Hall – From the Editor
- 28 **Kid's Corner**

All the buzzz...

Kim Lehman

Jerry Hayes



Cover Photo by Barb Bloetscher

#### 32 Is Beekeeping Relevant?

We Are the Gatekeepers of the Food Supply! John Miller

#### 35 Directional Discourse

A Sense of Direction Stephen Bishop

#### 36 Off the Wahl Beekeeping

Sustainable Beekeeping Part 2 New(ish) Beekeeper Column Richard Wahl

#### 40 Bill Mares

An Interview Reflecting on Bees, Life and Death Ross Conrad

#### **Bee Vet** 46

To Bee or Not to Bee Dialogues Part 1 Dr. Tracy Farone

#### 48 **Minding Your Bees and Cues**

When Beekeepers Meet Becky Masterman & Bridget Mendel

#### **Bees and Women** 52

Mrs. Sallie E. Sherman Nina Bagley

#### 800.289.7668

Executive Publisher - Brad Root

Associate Publisher, Senior Editor – Jerry Hayes, Jerry@BeeCulture.com, Ext. 3214 Layout and Design – Emma Wadel, Emma@BeeCulture.com Graphic Design and Customer Service – Stephanie Bayerl, Stephanie@BeeCulture.com, Ext. 3220 Advertising and Customer Service - Jennifer Manis, Jen@BeeCulture.com, Ext. 3216

#### Contributors

Clarence Collison • James E. Tew • Kim Lehman • John Miller • Ed Colby Jay Evans • Ross Conrad • Tracy Farone • Bridget Mendel • Becky Masterman

POSTMASTER: Send address changes to BEE CULTURE, The A.I. Root Co., 623~W. Liberty St., Medina, OH 44256

Subscription Information

Subscription information
U.S., one year print, \$34; two years print, \$62; one year digital, \$24; one year print and digital bundle, \$44; two years print and digital bundle, \$70. All other countries, (U.S. Currency only), one year print, \$74; two years print, \$148; one year digital, \$24; one year print and digital bundle, \$79; two years print and digital bundle, \$158. Send remittance by money order, bank draft, express money order, or check or credit card. Bee Culture (ISSN 1071-3190), October 2024, Volume 152, Issue 10, is published monthly by The A.I. Root Co., 623 W. Liberty Street, Medina, OH 44256. Periodicals Postage Paid at Medina, OH and additional mailing offices.

Subscriptions, Book Orders - www.BeeCulture.com • info@BeeCulture.com

Advertising - 800.289.7668, Ext. 3216; Jen@BeeCulture.com

Published by The A.I. Root Co. Copyright ©2024. All rights reserved.

# Contents

# 55 American Beekeeping Federation

Focus for 2024
Debbie Seib

# 60 When is an Inspection Too Long?

How Long Does it Take to Inspect a Colony of Bees? David Burns

#### 62 The Great E. L. Niño Lab Field Research Road Trip

California According to Catherine **The UC Davis Series**Catherine Croiser

# 68 Build a Better Bee Presentation

Part 3 Ed Simon

# 72 Harmony Between Honey Bees and Soybeans

Focus of MSU Entomologists
Meg Henderson

#### 73 Higbee Glassware

Oh Me, Oh My Jim Thompson

#### 76 **Hive Orientation**

When it Comes to Almond Population, Strong Colonies Don't Seem to Care! Mike Katznelson

# 82 Conversations With a Beekeeper

Mitigating Risks Through Climate Smart Practices Brett LeDuc

#### 84 The Sweetness of the Ages

Connecting Family Through Beekeeping
James Howard

#### 86 When a Weed is Not a Weed

Often These Plants Are Wanted By Pollinators Alyssum Flowers

#### 88 Wax Moths and Honey Bees

An Old Combative Relationship
James Tew

#### 92 Honey Recipe

Honey Lemon Curd Kori Pepper

#### 94 Calendar and Classifieds

## 95 Index and Image Contest Winter Prep

#### 96 **Bottom Board**

Up On The Roof Ed Colby





By John Martin



### Bee Culture<sup>®</sup> Pennsylvania Senate



#### **BC** Appreciation

This is a response to receiving their monthly Bee Culture Magazines.

I've never been as happy with it as when I received the print edition. How can I keep the PRINTED Bee Culture coming to me as before?

> Sincere thanks, Richard King

# **Bill 1198**

This is a response to John Miller's The Genie & The Bottle article from the August 2024 Bee Culture Magazine.

Thank you for your article in Bee Culture. As a PA beekeeper I have been disturbed by this new potential law ever since I heard about it. And even more disturbed that from what I have been hearing the PA State Beekeepers Association, Capitol Area Beekeepers Association and Lancaster Bee Society (all of which I am a member) are in support of this legislation. It sounds to me like just an oppressive, expensive and overbearing BIG government law that may not be enforced right away but with time will likely little by little be implemented. I hope the thing gets gutted before it is passed.

> Regards Tim Keller buzzinacres.square.site

Hello Mr. Keller,

Prior to writing the piece I contacted PA Beekeepers Assn. President & Vice-President; and two of the local PA clubs.

It's a long way from N.D. to PA to be throwing rocks at a proposed piece of legislation - when I don't live there - don't keep bees there - but do have beekeeper friends in PA.

The President of the PA State group responded and I appreciate his point of view; though I disagree with the point of view.

We were not belligerent or dis-respectful; folks can disagree without pulling guns or knives (believe it or not).

My commentary was not as 'juiced' as it might have been. I have learned incendiary adjectives seldom improve writing.

I haven't looked at SB 1198 recently.

My hope - my intent is that readers, whether living in PA or not - pay attention. We are in prelude.

> John Miller Cell: 916-718-4243 john@millerhoneyfarms. com

#### Don't Put Your Smoker in Your Truck!



The Magazine of American Beekeeping

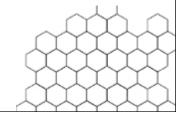
## **CLASSIFIEDS**

#### Selling something? Looking to purchase something? Hiring?

Place a classified ad with Bee Culture Magazine, and reach 12K+ subscribers every month.

Just \$1.00 per word.

Contact Jen at jen@beeculture.com or visit www.beeculture.com/advertise to submit your ad today!



#### Letter to the Editor

I would like to pass on to some of your newest beekeeping readers a lesson for harvesting honey that took me too many years to learn. My honey collecting is now much more enjoyable!

I am a backyard beekeeper with four different hives, two Layens, one AZ Slovenian and one Flow Hive. I have a few years with the wonderful hobby of beekeeping, however, for the most part I am still a novice. I do not have a honey extractor so I use a honey press and cut out all the combs filled with honey from my frames, and let the bees build a new foundation.

The last two years I have learned a few things that make the harvesting of honey a lot more enjoyable and easier.

First, I keep a list of all the things I need ready before I open the first hive. A bee suit that will enable me to take my time. Gloves. Hive tool. Two bee brushes, one for the work at the hive, and one for the bowls that will receive the honeycomb. A sharp knife to easily cut the filled honey combs into the bowls. Two to four large bowls to receive the filled honey combs. A small white plastic table to work on as I extract the honey. Replacement frames to put back into the hive for the ones I harvest so I don't need to put messy frames back.

I need to know where I will put the bowls with the honeycomb away from the hive once filled, so I do not get excessive bees from the hive all over the honey before I take it into the kitchen. I usually put them on a table about 30+ feet away from the hive, and in the shade, once they are full.

Second, I need to get the honey press set up in the kitchen with the

appropriate bowls and jars. It is so much less rush when I am prepared.

Third, and maybe the most important thing, is to remind myself not to rush through the process. It is so much more pleasant when I can take my time and really observe what I am doing and how the bees are doing. No darn interruptions to get something I should have had before starting. No worry that the hive is open too long, rather the comfort knowing I am doing things right.

So many times in my early years I was too anxious and not 100% prepared causing more mess and more anxiety as I harvested.

By taking the time to really prepare beforehand, and taking my time actually with the honeycombs, the actual harvesting of my honey is really enjoyable and way easier.

Tony Seitz



#### Coyote Ridge Correction Center Connell, Washington State

Dear Beekeeping Friends,

You may have noticed this correspondence comes from inside Covote Ridge Correction Center in Connell, Washington State. I am reaching for two reasons. First to introduce you to our beekeeping program at Coyote Ridge. We currently have WSBA (Washington State Beekeepers Association) beginning level and apprenticeship of which I am part. 2023 was really the first post-Covid apprenticeship classes that we were able to have. We successfully kept two hives, one of which we over-wintered quite successfully. Sadly, the first good week of weather we had our bees made a prison escape and absconded for greener pastures. Who could blame them?? This season we started with 2 nucs which we have successfully split and now have 4

hives going. They are all doing swimmingly so far! We even harvested a little honey besides what we stored in the bank.

Now on to the second reason for this correspondence. Our program has been cobbled together out of worn out leftovers from years past. Our woodenware is home built from pre-Covid carpentry shop classes, some 8-frame, some 9-frame and 10-frame boxes, our frames are all hand me downs as well. The tools and bee brushes would be the laughing stock of any reputable beekeeper. Basically we are out of expansion possibilities and working with the equivalent of sticks and rocks. We don't have enough bee suits for the entire class to wear at one time even... So, as you can guess, I am hoping you have, or know of grant proposals that I could write in the hope of getting new equipment?

Our beekeeping program has proven successful with little to nothing. Imagine what we could do here with enough proper supplies? The

The BeeMD

program in itself has been successful in garnering interest from staff and inmate alike. It provides positive educational opportunity, caring for other living beings, and has sparked passion and positive influence in an otherwise potentially negative environment. I myself am so passionate about beekeeping that I have written a business plan and intend to become a small commercial beekeeper upon my release in 2028!

If you have questions about our program or suggestions for who I can contact for grant submission please contact me at the address below, or you can contact our staff facilitator (Mr. Partida) at **mpartida@doc1. wa.gov** or (509) 543-5800.

Thank you for your time and commitment to beekeeping!

Sincerely, Szeth Magnus

c/o 416836 FA31 Post Office Box 769 Connell, Washington State 99326-0769

#### The Bee MD

USDA Animal and Plant Health Inspection Service's Identification Technology Program (ITP), in collaboration with Pollinator Partnership, is pleased to announce the release of The BeeMD, a diagnostic application for identifying honey bee health problems. This release includes much of the content from the original website first published in 2016. On this new platform, the "visual key" has been completely restructured and streamlined, and the entire website redesigned and expanded, offering additional informational, visual, and supportive content.

The BeeMD can be accessed at: https://idtools.org/thebeemd/

Visit our website to learn more about ITP's **tools** and **mobile apps**.

Visit **Pollinator Partnership's** website to learn about their activities in support of honey bees and other pollinators.



A diagnostic application for use in the field to identify honey bee health problems

oney bess play a orucial role in U.S. agriculture, so keeping them healthy is of unnost importance. The Bearti-Oves designed to help beekeepers quickly identify honey bee health or such as pasts, designed, and other an expension of the property in the pasts, designed, and other an expension of the pasts and as you use rectors, interested for beekeepers in horist marries, large or inductions, descriptions, and additional recovers are presented in first sheets for each horist bear on horist pasts or induction description, and additional recovers are presented in first sheets for each horist past or induction. A fitterable image gallery is also included, offering an image-based option to find and learn about horisty been health problems.



# CERTAN S SACK





**Proudly made** 

in the USA

## B402 / Certan

is the most advanced, effective and economical product for the protection of your combs from damage by wax moth



**Completely harmless** to humans and honey bees



**Environmentally** friendly

**B**402°

solution of Bacillus thuringiensis





Only one application needed for complete protection



Leaves no residues in wax or honey



Vita Bee Health is a trading name of Vita (Europe) Ltd.













moth larvae

# **NEXT MONTH**

#### Region 1

- *Varroa* control should be completed
- Finish Winter feeding
- Wrap
- · Mouse guards
- · Check bear fence
- Candy boards if needed
- Windbreak in place
- Combine queenless colonies

#### Region 2

- Combine weak colonies
- Did you reach low mite count?
- Install entrance reducers
- · Insulate with foam boards
- Double check hive weight
- Feed if needed
- Be sure you have a queen
- Buy more equipment on sale

#### Region 3

- · Last mite sampling
- · Check SHB traps
- Assure enough honey stores
- Winterize hives
- Replace queens
- Entrance reducers and mouse guard time
- · Provide windbreaks
- · Equalize colonies

#### Region 4

- · Check colony weight
- · Feed as needed
- · Wrap hives
- Combine weak colonies
- Clean and prep equipment for coming Spring
- Order supplies
- · Candy boards if necessary
- · Finish feeding

#### Region 5

- · Feed and wrap
- Be done with mite treatments
- Group nucs together and wrap
- Add foam insulated foam boards to colonies
- Feed, feed and feed some more
- Requeen if needed
- · Straw bales for windbreaks
- Get ready

#### Region 6

- Still time to sample and treat for *Varroa* in Texas
- · Make sure they have enough feed
- · Remove dead and dying colonies
- Condense and combine colonies where indicated
- Winter wrap
- Winter windbreak modifications
- Feed more
- SHB traps installed

#### Region 7

- · Check colony weight
- Condense colonies to one brood box
- Fall swarm management
- Wrap for cold rainy Winter
- Colonies moved to my indoor wintering building
- Mite control done
- · Feed syrup
- Our season ends in September in Alaska

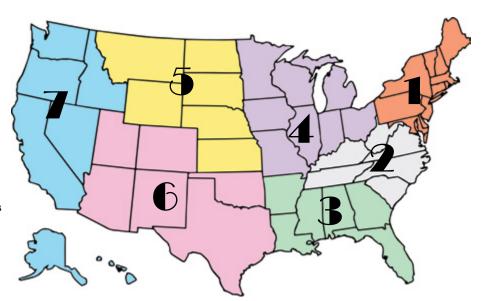
## **NOVEMBER**

#### 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.



Scan this to go straight to the form online!



## OCTOBER – REGIONAL HONEY PRICE REPORT

| REPORTING REGIONS  |        |        |        |           |        |        |        |               |        |         |        |        |
|--|--------|--------|--------|-----------|--------|--------|--------|---------------|--------|---------|--------|--------|
|  | 1      | 2      | 3      | 3 4 5 6 7 |        |        |        |               |        | History |        |        |
|  |        |        |        |           |        |        |        |               |        |         | Last   |        |
| EXTRACTED HONEY PRICES SOLD BULK TO PACKERS OR PROCESSORS    |        |        |        |           |        |        |        | Range         | Avg.   | \$/lb   | Month  | Year   |
| 55 Gal. Drum, Light  | -      | -      | 3.05   | 2.63      | 3.04   | 1.43   | 3.50   | 1.43-3.50     | 2.83   | 2.83    | 2.97   | 2.91   |
| 55 Gal. Drum, Ambr   | -      | 3.50   | 2.70   | 2.68      | 3.50   | 1.30   | -      | 1.30-3.65     | 2.78   | 2.78    | 2.87   | 2.85   |
| 60# Light (retail)   | 273.73 | 326.50 | 253.80 | 213.50    | 230.00 | 234.00 | 270.00 | 168.00-380.00 | 263.38 | 4.39    | 265.39 | 253.12 |
| 60# Amber (retail)   | 256.50 | 292.57 | 248.80 | 206.80    | -      | 230.00 | 255.00 | 150.00-380.00 | 253.58 | 4.23    | 256.93 | 246.00 |
| WHOLESALE PRICES SOLD TO STORES OR DISTRIBUTORS IN CASE LOTS |        |        |        |           |        |        |        |               |        |         |        |        |
| 1/2# 24/case   | 104.61 | 104.00 | 101.60 | 100.00    | 87.20  |        | 240.00 | 46.00-240.00  | 107.64 | 8.97    | 118.98 | 103.44 |
| 1# 24/case   | 164.14 | 202.80 | 160.90 | 149.02    | 181.42 | 138.00 | 480.00 | 97.00-480.00  | 172.15 | 7.17    | 167.85 | 161.87 |
| 2# 12/case   | 142.43 | 247.00 | 161.67 | 128.52    | 173.76 | 180.00 | -      | 90.00-350.00  | 154.43 | 6.43    | 170.19 | 148.81 |
| 12.oz. Plas. 24/cs   | 121.92 | 194.48 | 104.60 | 103.60    | 112.82 | -      | -      | 66.98-288.00  | 128.36 | 7.13    | 126.18 | 128.57 |
| 5# 6/case  | 171.80 | 275.75 | 269.46 | 137.39    | 156.48 | -      | -      | 108.00-400.00 | 184.97 | 6.17    | 163.23 | 160.77 |
| Quarts 12/case   | 174.21 | 204.38 | 225.36 | 181.99    | 199.40 | 270.00 | 408.00 | 120.00-480.00 | 213.63 | 5.93    | 196.06 | 197.06 |
| Pints 12/case  | 86.67  | 133.06 | 114.00 | 108.25    | 118.00 | 135.00 | 228.00 | 72.00-240.00  | 124.42 | 6.91    | 121.70 | 127.32 |
| RETAIL SHELF PRICES  |        |        |        |           |        |        |        |               |        |         |        |        |
| 1/2#   | 6.79   | 8.55   | 5.61   | 5.75      | 5.45   | 7.33   | 10.25  | 3.00-15.00    | 6.86   | 13.73   | 7.86   | 6.17   |
| 12 oz. Plastic   | 8.83   | 9.62   | 8.02   | 6.90      | 7.25   | 7.50   | -      | 4.59-15.00    | 8.30   | 11.07   | 8.20   | 7.63   |
| 1# Glass/Plastic   | 10.87  | 13.00  | 10.81  | 9.26      | 10.53  | 11.83  | 15.10  | 6.00-20.00    | 11.36  | 11.36   | 11.17  | 10.49  |
| 2# Glass/Plastic   | 18.66  | 24.82  | 18.26  | 17.09     | 21.55  | 21.00  | 15.60  | 2.20-40.00    | 19.41  | 9.71    | 19.14  | 17.76  |
| Pint   | 12.00  | 16.44  | 12.89  | 12.69     | 15.00  | 17.50  | 17.75  | 4.50-25.00    | 14.27  | 9.51    | 13.89  | 13.39  |
| Quart  | 24.21  | 27.68  | 22.58  | 20.48     | 24.30  | 33.33  | 33.20  | 11.20-50.00   | 25.18  | 8.39    | 24.33  | 22.20  |
| 5# Glass/Plastic   | 38.57  | 42.00  | 43.90  | 30.35     | 38.85  | 43.33  | -      | 14.99-80.00   | 38.38  | 7.68    | 34.45  | 37.13  |
| 1# Cream   | 12.49  | 17.00  | 13.08  | 12.97     | -      | 20.00  | 14.00  | 6.89-25.00    | 13.75  | 13.75   | 13.26  | 12.60  |
| 1# Cut Comb  | 16.58  | 19.40  | 16.33  | 15.14     | -      | 20.00  | 17.50  | 8.00-26.00    | 16.80  | 16.80   | 15.91  | 15.80  |
| Ross Round   | 14.00  | 15.00  | 10.00  | 10.75     | -      | 15.50  | -      | 7.00-24.00    | 12.86  | 17.15   | 14.33  | 14.43  |
| Wholesale Wax (Lt)   | 7.75   | 8.19   | 7.13   | 7.08      | 8.00   | 7.00   | 8.00   | 4.00-10.00    | 7.62   | -       | 7.79   | 6.98   |
| Wholesale Wax (Dk)   | 6.40   | 7.67   | 5.94   | 5.79      | -      | -      | -      | 3.50-10.00    | 6.57   | -       | 6.82   | 6.36   |
| Pollination Fee/Col.   | 113.75 | 73.33  | 88.00  | 160.00    | -      | 22.00  | 96.67  | 22.00-225.00  | 102.70 | -       | 119.09 | 102.88 |
| Price of Nucs  | 184.38 | 192.50 | 170.29 | 195.71    | 195.00 | 233.33 | 150.00 | 65.00-275.00  | 187.85 | -       | 183.11 | 184.45 |
| Price of Packages  | 137.50 | 152.50 | 121.67 | 165.00    | 155.00 | 190.00 | 250.00 | 105.00-250.00 | 155.83 | -       | 125.00 | 152.78 |

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 July/August 2024.

## Average Honey Flow Time and Amount per Region

Region 1:

Timing of Flow: Normal Amount of Flow: Average

Region 2:

Timing of Flow: Normal Amount of Flow: Average

Region 3:

Timing of Flow: Normal Amount of Flow: Average

Region 4:

Timing of Flow: Normal Amount of Flow: Average

Region 5:

Timing of Flow: Equally normal

and late

Amount of Flow: Average

Region 6:

Timing of Flow: Normal Amount of Flow: Average

Region 7:

Timing of Flow: Equally normal

and late

Amount of Flow: Light

#### Mite Treatment per Region

Region 1: Most used either a Formic product or non-chemical mite treatment.

Region 2: Most used an Unspecified Oxalic Acid product.

Region 3: Most used no mite treatment.

Region 4: Most used no mite treatment.

Region 5: Not enough data.

Region 6: Most used a non-chemical mite treatment.

Region 7: Not enough data.

#### Top Blossoming Plants per Region

Region 1: Clover, Goldenrod, Milkweed, White Clover, Buckwheat, Dutch Clover, Sumac, Soybeans, Bee Balm

Region 2: Sumac, Sourwood, Clover, Goldenrod, White Clover, Crepe

Myrtle, Chicory, Mimosa, Cotton

Region 3: Clover, Crepe Myrtle, Cotton, Sunflower, Spanish Needle, Queen Anne's Lace, Sumac, Sourwood

Region 4: Clover, Dutch Clover, White Clover, Soybeans, Goldenrod, Basswood, Milkweed, Trefoil

Region 5: Alfalfa, Clover, Sweet Clover, Goldenrod, Sunflower

Region 6: Crepe Myrtle, Rattlesnake Master, Vitex, Cotton

Region 7: Clover, Blackberry, Star Thistle, Sunflower, False Dandelion, Planted Borage, Firewood, Squash

#### Overall Top Blossoming Plants

Clover, Goldenrod, White Clover, Dutch Clover, Sumac, Crepe Myrtle, Soybeans, Milkweed, Alfalfa

# INSURANCE SERVICES

# APICULTURE INSURANCE PILOT PROGRAM A Specialized Program for Beekeepers

**Available Nationwide** 

# We are Proud Members & Sponsors of:

- \* American Beekeeping Federation
- \* California State Beekeepers Association
- \* Idaho Honey Industry Association
- \* Minnesota Honey Producers Association
- \* North Dakota Beekeepers Association
- \*Tennessee State Beekeepers Association
- \* Washington State Beekeepers Association

- \* American Honey Producers Association
- \* Florida State Beekeepers Association
- \* Michigan Commercial Beekeepers Association
- \* Montana State Beekeepers Association
- \* South Dakota Beekeepers Association
- \* Texas Beekeepers Association
- \* Wisconsin Honey Producers Association, Inc.

Kevin Rader: Buzzus@beekeepingins.com

www.beekeepingins.com

# **FINAL STOCK SALE!**

# Mite Away Ouick Strips

Save big this summer on our final inventory of Mite Away Quick Strips™

**Organic • Residue Free • Zero Resistance** 





All stock has an expiration date of January 2025.

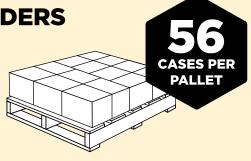
# CONTACT YOUR LOCAL DISTRIBUTOR TO ORDER WHILE SUPPLIES LAST!

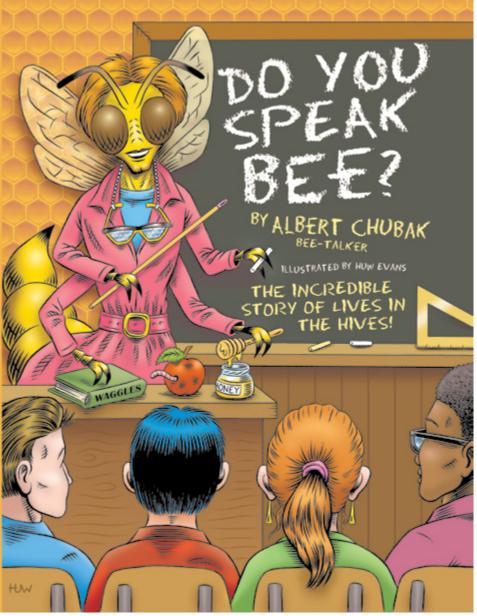


#### FOR FULL PALLET ORDERS

Contact NOD Apiary Products directly to order over 56 cases.

1-866-483-2929 orders@nodglobal.com





## **New Book**

#### Albert Chubak

If you've ever wondered about life inside a beehive, you're invited to step into the extraordinary world of honey bees and explore their remarkable lives. Dive into the fascinating communication bees use, a unique language that is distinct from human communication yet understandable with practice. Through intricate dances, chemical signals and vibrations, these incredible insects convey essential information to support their hives.

Beehives are bustling microcosms—truly nature's own big cities. From the worker bees to the queen, discover the multitude of roles and activities these tiny insects perform throughout their lives. Gain insights into the reasons behind every bee's actions. Appreciate the diversity and complexity of the colony's social structure and the interactions that are vital to their survival. You might be surprised at the parallels between a bee colony and daily life in a metropolis as you uncover how bees labor tirelessly for the greater good of their colony.

Do You Speak Bee? invites you to explore the honey bee's incredible life of cooperation and harmony, highlighting their critical role in our ecosystem. Discover the buzzing world of honey bees!

Available for order online, through the author, and select retailers nearyou. Please check **www.ecobeebox.com** for retailer availability.

Albert Chubak, a dedicated bee enthusiast and beekeeper since 1999, is a valuable and trusted resource to the beekeeping community. His passion for teaching and his comprehensive knowledge of bee behavior have made him an indispensable guide for both novice and experienced beekeepers alike. Albert's exploration of the intriguing world of honey bees includes his involvement in the American Beekeeping Federation, where he has contributed articles for new beekeepers. In 2013, he created the Mini Urban Beehive (MUB),a small hive dedicated to nurturing young honey bee colonies. Through this hands-on experience, he acquired a profound understanding of hive dynamics, allowing him to instruct both budding beekeepers and young learners.

In 2017, Albert's dedication and innovation were recognized with the prestigious P. F. Thurber Award for Inventiveness by the Western Apicultural Society in honor of his groundbreaking Eco Bee Box and his publication, Mini Urban Beehive. Albert is an active member of the American Beekeeping Federation, the Western Apicultural Society, Eastern Apicultural Society, and Saskatoon Bee Club. In 2017, Albert's writings led to an invitation to teach beekeeping throughout Jordan.

Albert Chubak is a father of three and resides in Saskatoon, Saskatchewan, with his wife, Camellea, and their tabby cat, Tiggar. Apart from his involvement in beekeeping, Albert's pursuits extend to teaching, traveling, woodwork, restoring early Volkswagen Beetles, gardening, and finding humor in life's moments.



# **Book Review Honey Bee Vet**

#### Dewey M. Caron

You may be familiar with the monthly articles by Bee Vet Tracy Farone, DVM. She has collected her articles and put them into a book, The Honey Bee Vet (2024, Northern Bee Books USBN 1914934814, paperback). The unedited published columns are grouped into eight sections which are labelled Frames. There is a chapter (termed super) at end with acknowledgments and useful notes/ resources for the topics covered in the frames. Each Frame has a short paragraph seeking to pull the grouped monthly columns together.

The coverage of the eight Frames (chapters) is uneven. For example, the four items of Frame three, Bee Biology, cover bees as heavy metal sensors (Sentinels), temperature range of individual bees and small hive beetle control (When Considering the Data), comb cells and discourse on microscopes (Hexagons) and ChatGPT (AI in Beekeeping). The 3 sections of Frame 4, Honey Bee Behavior are equally diverse: are our bees pets in same sense as other animals (The Bee Bond), swarming, "an overdone topic in the beekeeping literature" (How to Stop Swarming) and are bees domestic vs feral (The Conundrum of Feral Honey Bees).

Dr. Farone as a practicing vet initially specialized on public health, infectious diseases and ticks. She currently is on the faculty of Grove City College, (Western PA, north of Pittsburgh), teaching a wide variety of courses, pre-health advising and supervising student research. In 2018 she had an opportunity to take a sabbatical leave from her teaching position to refocus on honey bees. This included time in France at the Vet school of ONIRIS College in Nantes and interact with large-scale, migratory commercial beekeeping operations on the Crow reservation in Montana.

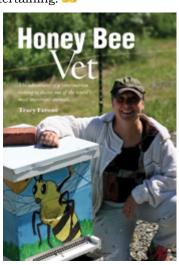
With her bee training, she has been working with veterinary continuing education providers to develop continuing education curriculum for veterinarians. She has given and continues to give bee lectures at multiple universities, veterinary associations and various bee clubs. Her column material demonstrates how veterinarian approach to animal care can be advantageous to improved bee management.

Endorsement/forward by Jay Evans points out that the compilation of the Bee Vet columns, especially for Frames five and six covering hive inspections and disease management, present "an organized and

fresh take on these topics, showing the value of setting criteria for investigating scenes and making rational decisions." Bee Culture editor Jerry Hayes writes "... a very understandable, and practical book to help all of us be better beekeepers."

Unfortunately, the book compilation lacks an index that would have been useful to find relevant material and the Table of Contents, using the original column titles, does not adequately explain topic coverage. Photos seem to be random and not always related to topics. Material, highly appropriate to a monthly column, remains but is distracting.

On balance, veterinarians and beekeepers alike will benefit from much of the material. It is interesting to follow Dr. Farone's journey as a veterinarian into honey bees. Her many comparisons of care of other animals and human interactions with animals are informative and entertaining. BC



#### Complete Selection of Beekeeping Supplies Live Bees, Equipment and More!

- · Bee Packages (pickup only)
- 5 Frame Nucs (pickup only)
- · Mated / Marked Queen races: Italian, Carniolan, Russian, Saskatraz · Honey Harvesting Items
- · Local Meyer Bees Stock Available
- Frames & Foundations Including Wax
   Glass & Plastic Bottling Supplies
- · Wood & Insulated Hive Box Parts
- · Large Selection of Tools
- · Protective Suits & Gear

- Feed Items & Supplements
- · Treatments for All Seasons
- · Queen Rearing Supplies
- Extractors Manual & Motorized
- · Winterizing Equipment
- · Honey, Candy & Gifts
- Books & Classes

www.meyerbees.com • 815-521-9116



#### **BASSWOOD** Split Section Boxes for Comb Honey

"Kelly" Size & Style for competitions as well as general comb production

shipping to USA locations or visit our showroom just 35 miles SW of Chicago



# Global Patties

You will too



Keep your hives strong and healthy with less effort and low cost Reduce winter loss and see faster spring build-up Help your bees thrive despite drought and stress from mites and disease

## Two North American Factory Locations

Plus depots across the U.S. and Canada to Serve You Best

BAY 2 - 8 East Lake Way NE, Airdrie Alberta T4A 2J3 Phone: 1-403-948-6084 - Fax: 1-403-948-6901

> 150 Parkmont West, Butte Montana 59701 Ph: 1-406-494-4488 - Fax: 1-406-494-3511

Call Us Toll Free in North America at 1-866-948-6084

We make protein and pollen patties to your specifications using only fresh, high quality, proven ingredients. Satisfaction guaranteed

Be sure to visit our website

# www.globalpatties.com

For our locations, news, ideas, specials, and much more...

Your bees will thank you



# **Honey Bee Colonies**

#### January 1 Honey Bee Colonies Down 1 Percent for Operations with Five or More Colonies

Released August 1, 2024, by the National Agricultural Statistics Service (NASS), Agricultural Statistics Board, United States Department of Agriculture (USDA).

Honey bee colonies for operations with five or more colonies in the United States on January 1, 2024 totaled 2.71 million colonies, down 1 percent from January 1, 2023. The number of colonies in the United States on April 1, 2024, was 2.71 million colonies. During 2023, honey bee colonies on January 1, April 1, July 1 and October 1 were 2.73 million, 2.71 million, 2.92 million, and 2.82 million colonies, respectively. Honey bee colonies lost for operations with five or more colonies from January through March 2024, was 396,820 colonies, or 15 percent. The number of colonies lost during the quarter of April through June 2024, was 288,190 colonies, or 11 percent. During the quarter of April through June 2023, colonies lost totaled 378,190 colonies, or 14 percent, the highest number lost of any quarter surveyed in 2023. The quarter surveyed in 2023 with the lowest number of colonies lost was October through December, with 254,520 colonies lost, or 9 percent. Honey bee colonies added for operations with five or more colonies from January through March 2024 was 404,100 colonies. The number of colonies added during the quarter of April through June 2024 was 617,420. During the quarter of April

through June 2023, the number of colonies added were 618,350 colonies, the highest number of honey bee colonies added for any quarter surveyed in 2023. The quarter of October through December 2023 added 118,840 colonies, the least number of honey bee colonies added for any quarter surveyed in 2023. Honey bee colonies renovated for operations with five or more colonies from January through March 2024 was 215,070 colonies, or 8 percent. During the quarter of April through June 2024, the number of colonies renovated were 521,790 colonies, or 19 percent. The quarter surveyed in 2023 with the highest number of colonies renovated was April through June 2023 with 485,640 colonies renovated, or 18 percent. The quarter surveyed in 2023 with the lowest number of colonies renovated was January through March 2023, with 113,440, or 4 percent. Renovated colonies are those that were requeened or received new honey bees through a nucleus (nuc) colony or package.

#### Varroa Mites Top Colony Stressor for Operations with Five or More Colonies

Varroa mites were the number one stressor for operations with five

or more colonies during all quarters surveyed in 2023. The period with the highest percentage of colonies reported to be affected by *varroa* mites was April through June 2023 at 52.0 percent. The percent of colonies reported to be affected by *varroa* mites during January through March 2024 and April through June 2024 are 43.3 percent and 54.8 percent, respectively.

#### Colonies Lost with Colony Collapse Disorder Symptoms Down 34 Percent for Operations with Five or More Colonies

Honey bee colonies lost with Colony Collapse Disorder symptoms on operations with five or more colonies was 70,650 colonies from January through March 2024. This represents a 34 percent decrease from the same quarter in 2023.

To read on, scan this QR code or visit: https://downloads.usda.library.cornell.edu/usda-esmis/files/rn301137d/4j03fq210/8w32sw99n/hcny0824.pdf







# FOUND IN TRANSLATION

#### Stress Management

Jay Evans, USDA Beltsville Bee Lab

Many self-care routines have an element of putting stresses in context. Is that a big fire? Can you picture a way out? Is it a cougar or housecat (love this video! https://www.youtube. com/watch?v=XuA1PwdOzT4?)? The second goal is identifying which challenges are actionable and which are not. Beekeeping is the same way. A good beekeeper has substantial tools and knowledge to address many of the stresses any one colony will face, and they act where it is appropriate, balancing time, expenses and skill. Knowing when to act depends on assessing the big picture, often with tools of diagnosis like sticky boards and mite washes, less often with nosema counts and brood assays, balanced by a careful visual examination of colony members and resources.

Unfortunately, beekeepers are often unaware of the stresses faced by their bees in the real world. There is a meme going around that honey bees are truly analogous to chickens and cows with respect to their outside habits, but neither of those animals will divide up and travel miles to find dozens of different food types, before returning to a huge home to share their risks and rewards. This is not to pick on livestock, which many of us depend on, nor is it an entry into the debate over whether honey bees are more 'wild' (they do depend in large part on human help). But the distinction is important when thinking of stress factors brought into the colony, and especially for stress factors that beekeepers either can't afford to measure in real time or are not trained to identify and address.

Sarah French and colleagues have just published an immense compilation of stresses faced by honey bees in Canada. Even more



Listen along here! https://www.beeculture.com/ found-in-translation-54/

ambitiously, they have added weighting factors to those stresses, to help predict which are really worth caring about (French, S.K.; Pepinelli, M.; Conflitti, I.M.; Jamieson, A.; Higo, H.; Common, J.; Walsh, E.M.; Bixby, M.; Guarna, M.M.; Pernal, S.F.; Hoover, S.E.; Currie, R.W.; Giovenazzo, P.; Guzman-Novoa, E.; Borges, D.; Foster, L.J.; Zayed, A. (2024) Honey bee stressor networks are complex and dependent on crop and region. Current Biology, 34, 1893-1903.e1893, doi:https://doi.org/10.1016/j. cub.2024.03.039). This is not the first such effort nor will it be the last. I advertised an excellent synthesis of hive stresses from Nathalie Steinhauer and the Bee Informed Partnership in the March 2021 Bee Culture ("Found in Translation: Dukes of hazard counting", pages 22-23... it should have been 'Duchesses'). Their great paper (Steinhauer, N.; Kulhanek, K.; Antúnez, K.; Human, H.; Chantawannakul, P.; Chauzat, M.P.; vanEngelsdorp, D. Drivers of colony losses. Current Opinion in Insect Science 2018, 26, 142-148, doi:10.1016/j.cois.2018.02.004) is one of the best entries into the world of bee stress and stress management. Many of us have worked our little hearts out following leads from papers like that to identify and mitigate the important factors that affect bee health. But the recent work is a gorgeous one and the most complete effort to date to see how the toxic twins or quadruplets of stress have subtle, but ultimately harmful, effects on bee health.

First a caveat, in this paper the researchers do not present data on hive strength, visual pathologies, or survival, though hopefully such



data will be folded in down the road. Instead, they cleverly take each independent measurement as a signal for stress in a colony by quantifying its tendency to co-occur with other known bad actors. First, the 54 pesticides, parasites, pathogens and food resources measured are all in the running to be negatives for bee health. Their logic is that higher counts of bad things reflect more colony stress. More subtly, at least some of the stress factors that co-occur with others might be drivers for things going downhill in a colony. For example, a chemical stress that consistently pairs with disease might be a candidate for impairing bee immunity. A few of the metrics have a quantitative basis, e.g., diet 'risk', but most data points reflect the presence or absence of a stress factor. As a bonus, the Supplemental Materials do present evidence for pesticide loads for a number of targets, rather than just the presence or absence of a specific pesticide. They followed colonies (240 total) in two distinct two seasons in eight beekeeper- and farmer-relevant crops, split into 60 apiaries of precisely four colonies (this is an enviously organized study).

The big take-aways are:

1)Bees in different crops bring back decent numbers and levels of both pesticides and disease, in about equal measure (on average 15 hits total, seven from chemicals and eight from biotics). Since these



Photo Credit: Shelley Hoover

measurements were taken inside hives, the authors have pretty high confidence that the results transcend 'hazards' ("the sky is falling but not just yet") and truly represent 'risk' ("you just ate a bad piece of shellfish").

2) In this study of bees across one or two years, certain crops seem to have lower risks in terms of raw counts than others (yay, Canadian lowbush blueberries, apple, and soybean) while others are quite full of identified risk factors (e.g., cranberry, canola, highbush blueberries). Please do not THINK of making pollination decisions or angry calls based only on these crop differences in raw counts, again colony fates are not presented here so we really don't know how these risks translate into bee colony health (see early work by May Berenbaum describing how you might do this of, e.g., Does the honey bee "risk cup runneth over?" in the Journal of Agricultural and Food Chemistry (2016), 64, 1, 13-20; https://doi.org/10.1021/ acs.jafc.5b01067). Nevertheless, the premise of all this hard work is that less stress is better and lower counts relate to lower stress.

3)Stress factors increased from pre-planting through the bloom and often continued to increase after pollination was finished. However, in some crops risk factors

were high from the start and stayed evenly high. Bees in cranberry fields showed 30 risk factors on average at the start, with an amazing 400+ co-occurrences within colonies, and those numbers increased only slightly over the pollination period. The authors label co-occurrences as interactions but more tedious studies will be needed to see which measured traits interact at the same time in the same bee, though that is nitpicky and we made the same best-guess in a 'mini-me' version of this approach during the throes of Colony Collapse Disorder (Cornman, R.S., Tarpy, D.R., Chen, Y., Jeffreys, L., Lopez, D., Pettis, J.S., van Engelsdorp, D., and Evans, J.D. Pathogen webs in collapsing honey bee colonies. (2012) PLoS ONE 7,e43562.,https:// journals.plos.org/plosone/article?id=10.1371/journal. pone.0043562). In the current huge study, the authors take care to statistically reduce the impacts of seasonality on increases by separating "time between collections" as much as possible from pre-, midand post-pollination, a great idea.

4)The ranking of different stress sources by importance based on their network size is beautiful and my guess is there are enough chemical and disease predictions in Figure 4 alone to gas up a dozen PhD projects or regulatory tests. Especially when those pairings

are connected to colony metrics or match similar rankings from other large-scale field studies. I know a lot of acronyms for disease agents but not for chemicals, so it popped out that the relative web sizes of several viruses increased over time (you have to drag down the supplemental figures or bug the authors for the figure describing the first collection). Also, the web from the first collection point seems to place a lower importance on the web size for 'mites', perhaps reflecting the cascading effects of mites as things go downhill and their numbers increase.

Can you use this information in managing your bees? I would argue yes, it certainly points to the value of monitoring disease in different settings, and perhaps the snowball effect of bad actors over the season. It is also quite helpful to compare these results with painstaking experiments aimed at individual pairs (i.e., fungicides paired with a pesticide or nosema) that small-scale experiments have explored. Do these pairings of toxic twins present a risk across Canada? Do they present risks in other areas with similar bees and agriculture and numbers of treatable diseases? The icing on this particular cake will come when the authors merge in colony strength and loss data and they are on to that, with updates at https://beecsi.ca/. So save room for dessert! BC





# Taking 2025 Italian Package Bee Orders



Over 100 Years of Commercial Package Shipping and Queen Raising Experience

RobertsBeeCompany.com



Call Today to Place Your Order (912) 427-7311





## **Pesticide Larval Mortality**

#### **Clarence Collison**

"Pesticide exposure is regarded as a contributing factor to the high gross loss rates of managed colonies of Apis mellifera. Pesticides enter the hive through contaminated nectar and pollen carried by returning forager honey bees or placed in the hive by beekeepers when managing hive pests. An in vitro rearing method was used to characterize the effects of seven pesticides on developing brood subjected to dietary exposure at worsecase environmental concentrations detected in wax and pollen. The pesticides tested included acaricides (amitraz, coumaphos, fluvalinate), insecticides (chlorpyrifos, imidacloprid), one fungicide (chlorothalonil), and one herbicide (glyphosate). The larvae were exposed chronically for six days of mimicking exposure during the entire larval feeding period, which is the worst possible scenario of larval exposure. Survival, duration of immature development, the weight of newly emerged adults, morphologies of the antenna and the hypopharyngeal gland and gene expression were recorded. Survival of bees exposed to amitraz, coumaphos, fluvalinate, chlorpyrifos, and chlorothalonil was the most sensitive endpoint despite observed changes in many developmental and physiological parameters across the seven pesticides. Their findings suggest that pesticide exposure during larval development may affect

the survival and health of immature honey bees, thus contributing to overall colony stress or loss. Additionally, pesticide exposure altered gene expression of detoxification enzymes. However, the tested exposure scenario is unlikely to be representative of real-world conditions but emphasizes the importance of proper hive management to minimize pesticide contamination of the hive environment or simulates a future scenario of increased contamination (Tomé et al., 2020)."

"Recently, the widespread distribution of pesticides detected in the hive has raised serious concerns about pesticide exposure on honey bee health. A larval rearing method was adapted to assess the chronic oral toxicity to honey bee larvae of the four most common pesticides detected in pollen and wax - fluvalinate, coumaphos, chlorothalonil and chloropyrifos - tested alone and in all combinations. All pesticides at hive-residue levels triggered a significant increase in larval mortality compared to untreated larvae by over two fold, with a strong increase after 3 days of exposure. Among these four pesticides, honey bee larvae were most sensitive to chlorothalonil compared to adults. Synergistic toxicity was observed in the binary mixture of chlorothalonil with fluvalinate at the concentrations of 34 mg/L and 3 mg/L, respectively; whereas, when diluted by 10 fold, the interaction switched to antagonism. Chlorothalonil at 34 mg/L was also found to synergize the miticide coumaphos at 8 mg/L. The addition of coumaphos significantly reduced the toxicity of the fluvalinate and chlorothalonil mixture, the only significant non-additive effect in all tested ternary (composed of three parts) mixtures. They also tested the common 'inert' ingredient N-methyl-2-pyrrolidone at seven concentrations. and documented its high toxicity to larval bees. They have shown that chronic dietary exposure to a fungicide, pesticide mixtures, and a formulation solvent have the potential to impact honey bee populations, and warrants further investigation. They suggest that pesticide mixtures in pollen be evaluated by adding their toxicities together, until complete data on interactions can be accumulated (Zhu et al., 2014)."

"DNA fragmentation and phosphatidylserine (PS) localization characteristic for cell death was investigated in the honey bee larvae treated with different pesticides. Honey bee larvae were reared in an incubator and exposed to one of nine pesticides: chlorpyrifos, imidacloprid, amitraz, fluvalinate, coumaphos, myclobutanil, chlorothalonil, glyphosate and simazine. Two TUNEL techniques for DNA fragmentation labeling and Annexin V to detect the localization of exposed PS were employed to localize cellular death. All applied pesticides triggered an increase in apoptosis (programmed cell death due to biochemical instructions) in treated compared to untreated larvae. The level of cell death in the midgut of simazine-treated larvae was highest at 77% mortality and statistically similar to the level of cell death for chlorpyrifos (65%), imidacloprid (61%), myclobutanil (69%) and glyphosate (69%) treated larvae. Larvae exposed to fluvalinate had the lowest midgut columnar apoptotic cell death (30%) of any pesticide-treated larvae. Indications of elevated apoptotic cell death in salivary glands and ovaries after pesticide application were detected. Annexin V localization, indicative of apoptotic cell deletion, had an extensive distribution in the midgut, salivary glands and ovaries of pesticide-treated larvae (Gregorc and Ellis, 2011)."



Photo Credit: Bee Informed Partnership (BIP).

"Adult honey bees usually maintain colony brood rearing temperature between 34-35°C (93.2-95°F) by thermoregulation. The brood may, however, also be subjected to suboptimal temperature. Here we investigated whether a decrease of brood rearing temperature may have effects on larval mortality, adult emergence, longevity, morphology and susceptibility to poisoning by pesticides (dimethoate). Using the *in vitro* rearing protocol (outside the living body and in an artificial environment) of Aupinel et al. (2005), we were able for the first time to control the brood temperature not only during the pupal stage but also during the larval stage. Honey bee larvae were reared in vitro at 35°C (optimal) and 33°C (91.4°F, suboptimal) from 12 hours after hatching for 15 days. Dimethoate was tested by ingestion either on four-day old larvae or on seven-day old adults. Our results showed that lower rearing temperature had no significant effects on larval mortality and adult emergence, but adult bee mortality was strongly affected. Moreover, adult workers emerging at 33°C were significantly more susceptible to dimethoate. Larval LD50 (lethal dose of a substance that kills 50% of tested subjects) (48 h) was, however, 28 times higher at 33°C than at 35°C. The striking differences between larvae and adults may be explained by differential larval metabolism at 33°C and resulting slower active ingredient absorption. They concluded that adult honey bees reared at even slightly suboptimal brood temperature may be more susceptible to pesticide poisoning and be characterized by reduced longevity. Thus, low temperature brood rearing could be another stress factor for colonies (Medrzycki et al., 2015)."

"Different bee-related products like honey, bee bread, wax and pollen can be contaminated by pesticides and some of them may affect colony health. Stored nectar and pollen serve as nutritional sources for nurse bees to produce food jelly for queen, worker and drone larvae and

contaminants might be transferred. For the risk assessments, it is necessary to understand the occurrences of residues in larval food jelly and to evaluate factors influencing the concentration of contaminants. This review summarizes the current literature dealing with residue analysis of pesticides in food jelly to assess the pesticide transfer, to evaluate factors influencing pesticide appearance in jelly, and to deduce risk for larvae. Previous studies determined residues of different pesticides in royal jelly and one in worker jelly. It was demonstrated that 30 out of 176 analyzed pesticides were detectable in different royal jelly samples. If residues remain in food jelly, this is mainly related to the used application and exposure method. It is shown that an artificial exposure (e.g., by forced feeding) results in higher detectable residues compared to field-realistic exposure scenarios (e.g., spray applications on plants). All detected concentrations were predominantly below the toxicity values for honey bee larvae, but sub-lethal effects should be considered. Moreover, it was demonstrated that there are still knowledge gaps about the contamination pathway of pesticides, dilution or accumulation factors within the hive, degradation time in bee-related matrices, and the impact on larval physiology. Filling those gaps is of major importance to consider realistic exposure scenarios in the risk assessment and to allow for sufficient protection level of honey bee larvae (Wueppenhorst et al., 2022)."

"Honey bee populations in North America are an amalgamation of diverse progenitor (biological ancestral forms) ecotypes experiencing varying levels of artificial selection. Genetic differences between populations can result in variable susceptibility towards environmental stressors, and here we compared pesticide tolerances across breeding stocks using a mixture of seven pesticides frequently found in colonies providing pollination services. They administered the pesticide mixture chronically to *in vitro* reared larvae at four concentrations of

increasing Hazard Quotient (HQ, or cumulative toxicity) and measured mortality during larval development. They found that different stocks had significantly different tolerances to their pesticide mixture as indicated by their median lethal toxicity ( $HQ_{50}$ ). The intensively selected Pol-Line stock exhibited the greatest pesticide sensitivity while Old World (progenitor) and putatively (assumed to be) feral stocks were the most pesticide-tolerant. Furthermore, we found that activity of the detoxification enzyme esterase was positively correlated with pesticide tolerance when measured using two different substrate standards and confirmed that larvae from the Pol-Line stock had generally lower esterase activity. Consistent with an increased pesticide tolerance, the Old World and putatively feral stocks had higher esterase activities. However, esterases and other detoxification enzymes (CYP450s and GSTs) were found in similar abundances across stocks, suggesting that the differences in enzyme activity they observed might arise from stock-specific single nucleotide polymorphisms or post-translational modifications causing qualitative variation in enzyme activity. These results suggest that selective breeding may inadvertently increase honey bees' sensitivity to pesticides, whereas unselected, putatively feral and Old World stocks have larvae that are more tolerant (Milone et al., 2020)."

"Honey bee colonies were exposed to pesticides used in agriculture or within bee hives by beekeepers: coumaphos; diazinon; amitraz or fluvalinate. Samples of bee workers, larvae and royal jelly were analyzed using Gas Chromatography-Electron Capture Detection (GC-ECD). Amitraz was quantified using High Performance Liquid Chromatography (HPLC), and Gas Chromatography-Tandem Mass Spectrometry (GC/MS/MS) was used for quantification of diazinon. Sixth day after treatment, coumaphos was found in the royal jelly (250 ng/g) secreted by nurse workers and fluvalinate was found in both bee heads (105 ng/g, 8 days after treatment) and in larvae (110 ng/g, 4 days after treatment). Amitraz residues in all sampled material were below the level of detection of 10ng/g. Diazinon was not detected in any of the analyzed samples (Smodiš Škerl et al., 2010)."

"Under laboratory conditions, the effects of thiamethoxam were investigated in larvae, pupae and emerging honey bees after exposure at larval stages with different concentrations in the food (0.00001 ng/µL, 0.001 ng/ μL and 1.44 ng/μL). Thiamethoxam reduced the survival of larvae and pupae and consequently decreased the percentage of emerging honey bees. Thiamethoxam induced important physiological disturbances. It increased acetylcholinesterase (AChE) activity at all developmental stages and increased glutathione-S-transferase (GST) and carboxylesterase para (CaEp) activities at the pupal stages. For midgut alkaline phosphatase (ALP), no activity was detected in pupal stages, and no effect was observed in larvae and emerging bees. They assumed that the effects of thiamethoxam on the survival, emergence and physiology of honey bees may affect the development of the colony. These results showed that attention should be paid to the exposure to pesticides during the developmental stages of the honey bee. This study represents the first investigation of the effects of thiamethoxam on the development of honey bees following larval exposure (Tavares et al., 2017)."

"Effects of glyphosate on survival, developmental

rate, larval weight, and midgut bacterial diversity of *Apis mellifera* were tested in the laboratory. Larvae were reared in vitro and fed diet containing glyphosate 0.8, 4, and 20 mg/L. The dependent variables were compared with negative control and positive control (dimethoate 45 mg/L). Brood survival decreased in 4 or 20 mg/L glyphosate treatments but not in 0.8 mg/L, and larval weight decreased in 0.8 or 4 mg/L glyphosate treatments. Exposure to three concentrations did not affect the developmental rate. Furthermore, the intestinal bacterial communities were determined using high-throughput sequencing targeting the V3–V4 regions of the 16S rDNA. All core honey bee intestinal bacterial phyla such as Proteobacteria (30.86%), Firmicutes (13.82%) and Actinobacteria (11.88%) were detected, and significant changes were found in the species diversity and richness in 20 mg/L glyphosate group. Their results suggest that high concentrations of glyphosate are deleterious to immature bees (Dai et al., 2018)."

"Honey bee larvae exposed to sublethal doses of imidacloprid show behavioral abnormalities as adult insects. Previous studies have demonstrated that this phenomenon originates from abnormal neural development in response to imidacloprid exposure. Here, we further investigated the global gene expression changes in the heads of newly emerged adults and observed that 578 genes showed more than 2-fold changes in gene expression after imidacloprid exposure. This information might aid in understanding the effects of pesticides on the health of pollinators. For example, the genes encoding major royal jelly proteins (MRJPs), a group of multifunctional proteins with significant roles in the sustainable development of bee colonies, were strongly downregulated. These downregulation patterns were further confirmed through analyses using quantitative reverse transcription-polymerase chain reaction on the heads of 6-day-old nurse bees. To our knowledge, this study is the first to demonstrate that sublethal doses of imidacloprid affect mrjp expression and likely weaken bee colonies (Wu et al., 2017)."

"Neonicotinoid insecticides have come under scrutiny for their potential role in honey bee declines. Additionally, reduced access to forage in agricultural areas creates the potential for risk interactions with these pesticides in regions critical for honey production. In this study, they sought to determine whether sufficient access to pollen during larval development could mitigate stress associated with oral clothianidin exposure in honey bee adults. An apiary was established where pollen traps deprived half of the colonies of pollen, which was then supplemented to the others. Adults were fed 0, 10, 40, 200 or 400 µg/L clothianidin in the laboratory, and larval and adult lipids and superoxide dismutase (SOD) activities were compared between feeding treatments. Survival at sublethal concentrations of clothianidin was significantly reduced for adult bees reared in pollen deprived colonies. Adult SOD activity was affected by clothianidin dose but not larval feeding treatment, though within the pollen-deprived cohort, SOD was greater in controls than those fed clothianidin. Larval SOD differed between field replicates, with supplemented colonies having slightly higher activity levels during a period of pollen dearth, indicating that supplementation during these periods is particularly important for mitigating oxidative stress within the hive. Larval lipids were significantly higher in

supplemented colonies during a substantial pollen flow, though adult lipids were unaffected by feeding treatment. These results suggest that during periods of pollen dearth, oxidative stress and adult worker longevity will be improved by supplementing colonies with locally collected pollen (Mogren et al., 2019)." sc

#### References

Aupinel, P., D. Fortini, H. Dufour, J-N. Tasei, B. Michaud, J-F. Odoux, and M-H. Pham-Delegue 2005. Improvement of artificial feeding in a standard in vitro method for rearing Apis mellifera larvae. Bull. Insectol. 58: 107-111.

Dai, P., Z. Yan, S. Ma, Y. Yang, Q. Wang, C. Hou, Y. Wu, Y. Liu, and Q. Diao 2018. The herbicide glyphosate negatively affects midgut bacterial communities and survival of honey bee during larvae reared in vitro. J. Agric. Food Chem. 66: 7786-7793.

Gregorc, A. and J.D. Ellis 2011. Cell death localization in situ in laboratory reared honey bee (Apis mellifera L.) larvae treated with pesticides. Pestic. Biochem. Physiol. 99: 200-297.

Medrzycki, P., F. Sgolastra, L. Bortolotti, G. Bogo, S. Tosi, E. Padovani, C. Porrini, and A,G, Sabatini 2015. Influence of brood rearing temperature on honey bee development and susceptibility to poisoning by pesticides. J. Apic. Res. 49: 52-59.

Milone, J.P., F.D. Rinkevich, A. McAfee, L.J. Foster and D.R. Tarpy 2020. Differences in larval pesticide tolerance and esterase activity across honey bee (Apis mellifera) stocks. Ecotoxicol. Environ. Saf. 206: 111213.

Mogren, C.L., R.G. Danka and K.B. Healy 2019. Larval pollen stress increases adult susceptibility to clothianidin in honey bees. Insects 10: 21.

Smodiš Škerl, M.I., V. Kmecl, and A. Gregorc 2010. Exposure to pesticides at sublethal level and their distribution within a honey bee (Apis mellifera) colony. Bull. Environ. Contam. Toxicol. 85: 125-128.

Tavares, D.A., C. Dussaubat, A. Kretzschmar, S.M. Carvalho, E.C.M. Silva-Zacarin, O. Malaspina, G, Pérail, J.-L. Brunet, and L.P. Blezunces 2017. Exposure of larvae to thiamethoxam affects the survival and physiology of the honey bee at post-embryonic stages. Environ. Pollut. 229: 386-393.

Tomé, H.V.V., D.R. Schmehl, A.E. Wedde, R.S.M. Godoy, S.V. Ravaiano, R.N.C. Guedes, G.F. Martins and J.D. Ellis 2020. Frequently encountered pesticides can cause multiple disorders in developing worker bees. Environ. Pollut. 256:113420.

Wu, M,-C., Y.-W. Chang, K,-H. Lu and E.-C Yang 2017. Gene expression changes in honey bees induced by sublethal imidacloprid exposure during the larval stage. Mol. Biol. 88: 12-20.

Wueppenhorst, K., J.H. Eckert, M. Steinert, and S. Erler 2022. What about honey bee jelly? Pesticide residues in larval food jelly of the western honey bee Apis mellifera. Sci. Total Environ. 850: 158095

Zhu, W., D.R. Schmehl, C.A. Mullin, and J.L. Frazier 2014. Four common pesticides, their mixtures and a formulation solvent in the hive environment have high oral toxicity to honey bee larvae. PLoS ONE 9(1): e77547

Clarence Collison is an Emeritus Professor of Entomology and Department Head Emeritus of Entomology and Plant Pathology at Mississippi State University, Mississippi State, MS. Became interested in entomology through 4-H and studied honey bees for both my Master's and Ph.D. Have been involved with beekeeping for 50+ years.



701.553.8393 • 719.747.4504

dakgunn@rrt.net • sdakotagunness@gmail.com www.dakotagunness.com

## Need syrup or liquid sugar?

## **Need a new Dakota Gunness Uncapper?**

Call today for details and pricing! You will be glad you did!

Contact Sarah Gunness Ostrem at 719.747.4504 or Arthur Gunness at 701.553.8393

Checks, wire transfers or ACH payments accepted ALL ORDERS MUST BE PREPAID



Donald Gunness 1928-2017 Rest in peace Dad. We love you. You will live in our hearts forever.



# 

**JULY 1 - OCTOBER 30** 

\$23 PER QUEEN

**Kona Italian &** Carniolan/Italian hybrid



# \$23 PER QUEEN

Paradise VSH Italian & Carniolan/VSH Italian hybrid

808-328-9016 SALES@KONAQUEEN.COM

Price valid on orders of 100+ and includes FREE SHIPPING! \$4 OFF all other quantities. GUARANTEED live delivery!

www.konaqueen.com | www.paradisequeenhawaii.com

🔘 @konaqueenhawaii 🖪 @konaqueenhi 💢 🕞 @paradisequeenhi





Beekeeping & Honey Bees - Our Business Since 1863



Reel capacity 6 - 9 1/8" deep frames

12-61/4" shallow frames Individual Frame Guides

24" Diameter, 28" High

M00412 6-12 Frame Radial



M00446 20 Frame Radial



4 Section Reel Holds Any Size Frame 20 Individual Frame Pockets Can Hold Up To 36 Frames 30" Diameter, 28" High





#### www.dadant.com









# STUDY

# Who, What, When, Where, and How???

From the Editor, Jerry Hayes



We were shared some old daguerreotype's (first photos on glass) from the late 1800's. We have identified most of them. But, and there is always a but, this one is interesting and intriguing. I had it converted from the glass photo to a digital one to share with you. This is unique considering the late 1800's. Is this a Beekeeping Training Class? When was it? Is this in the USA or somewhere else globally? Who are the Beekeepers? Who is the Instructor?

We have not been able to obtain any information on Who, What, When, Where and How? OK, all of you History Experts. What do you think?

Hi Jerry,

I'm not much of a history expert but I can offer an uneducated guess.

The nature of the photo, it being an old daguerreotype from the late 19th century and the adult men are black with one exception suggests that this photo would have been taken in the US or maybe Canada, after the Civil War. The man second from left being the only white man (and with his shirt sleeves rolled up) suggests he has been working and is the beekeeper and is showing off his apiary to the visitors. (It would have been difficult for most black men to own much of anything back then and where would one learn beekeeping skills in the segregated South that by design prevented any chance of education and upward mobility by cur-

rent and former slaves?) It looks like only a single smoker is in use, which strengthens the theory that this is an educational event led by a single experienced beekeeper. The two boys in the background are probably the beekeeper's sons, there to take in the unusual visitors and event. Given how slowly and begrudgingly the South accepted the new laws granting equal rights to Blacks, this photo was probably taken in the northern part of the States, or maybe Canada, where there were more people (though not all) with tolerant and accepting attitudes towards African Americans (and a little bit more tolerant of whites that offered assistance to blacks and treated them with some measure of respect and dignity rather than to exploit and denigrate them). The Black men in attendance are probably former slaves and sharecroppers, who not only had the courage to leave all they knew to try and find a better life, they are showing ambition and curiosity to learn and grow to a new profession/skill despite having mostly been downtrodden and discriminated against for the majority of their lives. These men have likely been in the North and freed for some time as they have managed to obtain suits and hats (one even has glasses) and are dressed like men who have managed to obtain gainful employment and have been established in the North for sometime as opposed to having just migrated recently up from

the South with few if any belongings. Unless, this is in Canada where people of African and Caribbean descent enjoyed many more freedoms than those in the United States. However, this is all based on the claim that this was circa late 1800s.

Wikipedia states "Daguerreotype" (/dəˈgɛər(i.)əˌtaɪp, -(i.)ου-/; **French**: daguerréotype) was the first publicly available **photographic** process, widely used during the 1840s and 1850s. "Daguerreotype" also refers to an image created through this process.

Invented by **Louis Daguerre** and introduced worldwide in 1839, the daguerreotype was almost completely superseded by 1856 with new, less expensive processes, such as **ambrotype** (**collodion process**), that yield more readily viewable images.

Since the hives are Langstroth-style removable frame hives, this photo was clearly taken post 1850 which means the photographer was possibly still using this old and outdated technology that was more expensive than the collodion process that replaced it. This photographer may have been experiencing financial hardship and/or may have been a Black person unable to easily access the newer more desirable technology, unless the photo is actually from the late 50's or early 1860's during the transition between the technologies. That's about as wild a guess I can come up with. Helpful?

Ross Conrad

• • • • • • • • • • •

Jerry,

My best guess is that it is at an Ag & Tech college in the South, possibly at a historically Black school. Given the clothing, I would guess it is post WWI, pre-Depression. I think your best bet would be to identify the older white man who undoubtedly was the instructor. He could have been an extension agent or college instructor or professor. But, you probably already thought of all those points.

Good luck, David Morris

• • • • • • • • •

Hi Jerry,

I am mystified by the photo. Don't you have info? Date range or something?

Pete 🕦





# all The Burss Mooo

Hello Friends,

Enjoy the fall festivities!

Bee B.Queen



## Sparkly Honey Bee Glop

There are many different names for this glue and a borax concoction: Gak, Oobleck, Blobber, etc.)



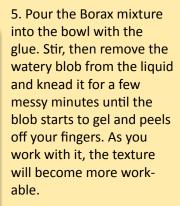
#### You Will Need:

- White glue (Elmer's works the best)
- Borax
- Water
- Glitter and sequins
- Yellow food coloring
- Two containers
- Bee buttons (optional)



#### **Directions:**

- 1. Dissolve ¼ cup Borax in 1 cup of hot water. A glass measuring cup works great for this step.
- 2. Add yellow food coloring to this mixture.
- 3. Mix ¼ cup glue and 1 cup water in a bowl.
- 4. Add glitter, sequins and other shiny things. The more the merrier!



- 6. Pour off any left over water.
- 7. Store in a plastic bag.









# ooo Bee Bad's comer



#### **Bee Glasses**

Make a pair of crazy bee glasses. Use whatever you may have around the house to create your glasses. Cardboard, old sunglasses, chenille sticks, paper, cups...

These glasses where made with an old pair of swimming goggles, a black permanent marker and chenille sticks.



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

October 2024



#### **Riddles**

- Q. Which varieties of bees never die?
- A. Zom-bees



- Q. How do bees make roads?
- A. Nec-tar



#### 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.



This is an activity you can do at a party or in your classroom. Each person can make their own sparkly honey bee glop.

- 1. Mix large amounts of water, borax, and food coloring in a water bottle or jar in advance. 1 tablespoon Borax to 1 cup water.
- 2. Mix 1 part glue to 1 part water in another bottle or jar in advance.
- 3. Give each person a small paper cup. Fill about half full with the glue mixture.
- 4. Add glitter and stir with a wooden stick.



5. Pour a little bit of the borax and water into the cup. Stir with a wooden stick. Work it with your hands. It is basically 2 parts glue mix to 1 part borax solution.

Part 9

part

- 6. Discard the extra water. No need to measure. The chemical reaction of the glue and borax will use whatever water it needs to become a solid and leave the rest.
- 7. Put in plastic bags to take home.

# Most Effective Winter Protection





20 | In

Innovation Award Winner





Scan here to learn how

HiveHugger.com



Winter Will Come, Don't Be Caught Unaware

Be Prepared

#### Bee Cozy Insulated Winter Wrap M61005

Brought to you from our Canadian friends at NOD apiaries. This two story bee cozy is sized to fit two double deep 10-frame boxes and will keep your bees warm all winter long!





Artificial Pollen 23

#### WINTER PATTIES

Dadant was the first to bring you the winter patty and continues to manufacture the best winter feeds available! Our winter patties come in 10 lb. and 40 lb. boxes and are the perfect thing to keep your bees happy and healthy all winter long!



#### Winter Wrap M610010

For extra precaution we recommend wrapping your hives during the winter. Available in both 8-frame and 10-frame sizes and can cover 2 boxes! Wrappings also include Velcro straps for easy on and off!



#### Moisture Box M60060

Place wood chips, burlap, or cotton on hardware cloth to wick away condensation. With a convenient removable front door you can easily feed winter patties without disturbing the colony all while keeping it dry.

#### www.dadant.com



- 51 S. SECOND STREET, HAMILTON IL 62341 PHONE (217) 847-3324 FAX (217) 847-3660 TOLL FREE 1-888-922-1293 •
- CHICO, CA (877) 332-3268 FRESNO, CA (877) 432-3268 PARIS, TX (877) 632-3268 SIOUX CITY, IA (877) 732-3268
  - WATERTOWN, WI (877) 232-3268 ALBION, MI (877) 932-3268 WILLIAMSPORT, PA (877) 532-3268
    - CHATHAM, VA (800) 220-8325
       FRANKFORT, KY (888) 932-3268
       HIGH SPRINGS, FL (877) 832-3268



# IS BEEKEEPING RELEVANT?

#### John Miller



Fruit on display at La Boqueria market in Barcelona, Spain. Photo by: Dungodung.

To beekeepers, yes! We absolutely are relevant! We are the gatekeepers of the food supply!

However, we often occupy our own tribal echo chamber. We are fabulously flattered when someone beyond our tribe asks for an interview, or a recorded studio program, a videoed production and the 2024 near-ubiquitous podcast.

But make no mistake. There is, in America – whether in the public/private arena or government policy-making – a near-complete absence of awareness of beekeeping.

This observation is not necessarily true in North Dakota, where 823,000 legally registered colonies of bees (and another 200,000 or so more *unregistered* colonies) will produce 25% of the entire American honey crop. We have more bees than people up here; probably more bees than cows. There are over 22,000 registered locations in North Dakota. Those 2300 +/- semi loads of bees will begin the 2025 season in a California almond orchard.

But back to the narrative. Generally speaking – beekeeping, and beekeepers are a curiosity. A Farmers Market oddity in a farmers market of oddities. Less than 1% of the food consumed in America is purchased

at the 5,345 Farmers Markets (2021 USDA). I'm not far from right saying the average Austin commuter is blissfully unaware of beekeeping - though acutely aware of electricity rates and the price of gasoline. That's because Austinites use a lot of electricity to cool their homes and businesses every day; and they drive a lot of miles in the famous Texas-size city sprawl. Austinites do have a jar of honey, or maybe hunny; somewhere, maybe in a cupboard.

It isn't easy to raise awareness. A trillion dollars in American advertising seldom does more than dull our senses – but it can be done. A few recent examples of break-through awareness:

New Coke! The Toyota Prius. The 1984 Macintosh (and the memorable Super Bowl ad).

The iPhone (2006). Asian Citrus Psyllid (destroying the Florida citrus industry).

Digital Content upending print, magazines, maps, newspapers, newsletters, you name it.

Most awareness-raising is temporary and frivolous. Are you a Swifty? Some awareness is lasting: treatments for diseases, cancers, obesity. But long term, the steady drumbeat to get more exercise! im-

prove our diets! falls on deaf ears; 'It's too hard'. Eat more honey! Meh.

American beekeepers may number 125,000 out of 330,000,000 Americans. Of that number, maybe 500 outfits represent 95% of the managed American colonies. Of that 500, maybe 100 outfits populate the beekeeping industry groups that fund the research, write the letters, drive the incremental improvements, sample new stock introductions, try out the new devices, collaborate with customers - which isn't often easy - and challenge suppliers to do more with less. Twenty years ago I told equipment suppliers it was time to stop hand assembling, stapling, nailing, painting and stenciling hive bodies, rims, lids, and bottom boards. Two years later, we stopped buying hammers and nail guns and pallets of paint because the suppliers, Mann Lake, Dadant and Used Pallet Co. recognized and met the customers needs. A semi-load of 1800 assembled, painted, stenciled, branded deep rims is not cheap - but it is cheaper than an entire crew pounding together rims when beekeeping employees should be keeping bees, not blacking fingernails.

There is a Why in all this commentary. Why a microscopic sliver of the 330,000,000 Americans will profoundly upend beekeeping.

Supply chains, especially during this decade are under intense scrutiny; growers, handlers, packaging, transportation, sanitation, compliance, irrigation (where needed) all represent supply chain intersections. Honey bees, the most beneficial pollinator in crop production are also a link coming under scrutiny in ways we do not yet fully comprehend. We will.

An example: The supply of colonies available for almond pollination is finite. The strength of those colonies, on a macro basis, is a Bell curve. The market for pollinating units, a colony of bees, ranges from the \$80 colony to the \$240 colony – depending on the myriad motivations growers evaluate. For industries dependent on bees, and knowing the upheavals beekeepers endure with

all kinds of pressure on bees – colony health being the primary, and queen bee survival as a close second; It should be no surprise that as supply chains are ever more closely scrutinized – an ominous alternative, no – it's a necessity – presents.

Eliminate risk. Eliminating supply chain risks = stronger supply chain performance.

Eliminate the need for a beneficial pollinator. Risk associated with colony availability is eliminated; weather condition risks are reduced. The examples are in the almond industry. Following is a list of 'self-fruitful' almond varieties.

The Independence variety represented 363,000,000 pounds of almond production in 2023.

The Liberty variety represented 9.5 thousand pounds in 2023.

Shasta variety represented 36.5 million pounds of production.

Yorizane variety will have production volume for the first time in 2024.

EarlyBird variety was released in 2024.

UC Variety Trials not yet released:

UCD 8-160

UCD 1-271

Y 117-86-03

Y 117-91-03

P16.013

P19.013

UCD 8-201

Y-121-42-99

These varieties, in the absence of bees, may not produce the 3,500 pounds per acre of Nonpareil; and may lack the superior flavor of a Carmel; but trials will continue, and accelerate.

The grower eliminates the \$400+ per acre pollination fee cost. Weather is not yet controlled; but do not underestimate the California Legislature's ability to withhold water. As genetics race ahead at the speed of computational capacity - change will be imposed on how food is produced. In a population of 330 million consumers - probably 90% of those consumers will not know, or care where food comes from. 30% of all produce is now imported, anyway. Americans can buy citrus from South Africa, Chilean cherries & berries in November, blueberries from everywhere 12 months a year.

Do consumers, sentient people who are aware that they are aware; do

these people who like to eat connect the jar of honey, the by-product of keeping bees – do they connect the jar of honey with the intangible, the indirect benefit that the hard-working colony of bees produced? Of course not. At Kroeger's or at Costco, the honey is stocked far, far away from the most evident primary product – the fresh produce section. I'm not going to whine about the placement of honey next to maple-flavored high fructose corn syrup or hydrogenated peanut goo. That is not the point.

A thousand years ago the only sweetener available was honey. No one in the year 1024 gave a fig about crop pollination. In 2024 we bloat in an ocean of cheap sweeteners. Crop pollination and food security will sustain beekeeping for some time to come. However, The Future Will Be Different.

john@millerhoneyfarms.com





# Our newest edition!

# The 42nd Edition of the ABC and XYZ of Bee Culture



The ABC and XYZ of Bee Culture has been keeping beekeepers around the world successful since 1877!

- Over 800 pages packed with information
- Hundreds of color photos and illustrations throughout
- More than 50 contributors discuss everything honey bee
- This book is a mix of reference, the how and why things are done and a history of how beekeeping got where it is today
- A must for every beekeeper large and small

Get your copy today at www.Store.BeeCulture.com/Books/



## **Directional Discourse**

Stephen Bishop

Listen along here! https://www.beeculture.com/directional-discourse/

Not to brag, but I may be one of the only humans on Planet Earth capable of admitting my inability to navigate in the right direction. Yep, I'm prone to getting lost. I didn't used to be this self-aware. I used to adamantly insist that I had the directional precision of a honey bee. A mere glance at the sun's position in the sky, and I could make a bee line to my destination, no GPS needed, no compass necessary. For brevity's sake, I won't bore you with the details of my directional downfall: suffice it to say, being lost in the woods for hours and being rescued by your grandma's Labrador has a humbling effect on a man.

So, these days, I don't pretend to know where I'm going. I just outsource navigation to the two females in my life, Siri and my wife. Sometimes my wife will get jealous of Siri and try to overrule her GPS-guided capabilities. This usually doesn't end well. My wife has the bad habit of getting her left and right wrong fifty percent of the time. To clarify, she knows her left from right — it just gets lost in translation somewhere between her brain and vocal chords. This can make driving to new destinations quite tense.

ME: Do I turn left or right?

WIFE: Left, wait, no the other left. ME: (Swerving across several lanes of traffic, horns blowing in the background) You mean right?

WIFE: Right, that's where I pointed. ME: Well, you said left but pointed right. Can't we just let Siri guide us?

SIRI: Renavigating

It's amazing to me that honey bees, creatures with a brain the size of a salt grain, have a better sense of direction than I ever will. Think about it this way. A honey bee weighs roughly 0.00025 pounds. That means I'm 720,000 times bigger than a honey bee (I'll let you do the math on how much I weigh). A honey bee's home range, in which it is presumably capable of navigating without getting lost, is roughly four miles from the hive, or 50 square miles. That means if the honey bee was my size it's equivalent navigational range would be 36 million square miles. That means a human-sized honey bee would be able to navigate an area larger than Europe and Asia combined without getting lost. Granted, I was an English major so my math might be way off, but rest assured if you ever get lost and your phone is dead or doesn't have signal, a

human-sized honey bee should be able to point you in the right direction, at least if you know how to interpret the waggle dance.

Nowadays, if you stop and ask directions, people look at you like you're crazy. But before the invention of GPS navigation systems and smartphones, giving and receiving directions among the human species was a bit of an art form. People took pride in their ability to clearly communicate landmarks, routes, and whereabouts. Many farmers I know can still do this, all while more or less giving you the whole history of the countryside while pointing you in the right direction. But directing is slowly becoming a lost art. I know this because, as a beekeeper, one of the most common questions I get is "Is this honey local?" To which I reply, it "depends on where you live." At this point, it's not uncommon to watch young folks struggle to describe the general whereabouts of their domicile. So call me old-fashioned, but I miss the primitive days when people knew where they lived and could tell you how to get there. In fact, sometimes I feel a little guilty marketing local honey to people who don't know their locality, much less how to navigate to it. BC





# New(ish) Beekeeper Column Off the Wahl Beekeeping

## SUSTAINABLE BEEKEEPING (PART 2)

## **Richard Wahl**



https://www.beeculture.com/off-the-wahl-beekeeping-19/

Listen along here!

#### **A Continuation**

In last month's issue I wrote about what I feel are key factors in any beekeeper becoming self-sustainable. Besides saving the expense of buying new packages, nucs or queens each year, bees that are adapted to your own local area and environment would seem to have a better chance to survive our variable Winters. In last month's issue I summarized the sub-topics of mite management, feeding your bees, working with splits and managing swarming. In this month's article I will conclude with portions on the use and benefits of nucleus hives (nucs), keys to good winterizing practices and finally some techniques as to how to raise your own queens. Becoming more proficient in these areas should help in becoming a self-sustainable beekeeper. To continue with these key factors here is more on nucleus hive techniques and uses.

#### **Nucleus Hives (Nucs)**

A nucleus hive can be described in many ways. Although it is usually thought to be a smaller enclave of bees residing in a five frame nuc box, it can be almost any size from two frames up to a partially filled ten frame deep super or even larger. I have worked with the smallest two frame arrangement and also have had a nucleus colony move into an empty double deep hive containing twenty frames. The key element is that the nucleus contains bees in all stages of development with a laying queen, nectar and pollen supplies and enough bees to cover several frames in order to take care of the new eggs, larva and brood. Although bees moving into an empty hive is more likely to be called a swarm, it may only take them a few days before comb is drawn, if not already provided, and the queen starts to lay eggs. I have seen queens that lay eggs in comb that has only been half drawn out to its full size. While the egg takes three days to become a larva and another six days before it is ready to be capped the bees continue to complete the cell in that nine day window. Once the capping of brood begins then the new swarm can be considered a nucleus colony as during that time forager bees will also be bringing in pollen and nectar. On the other hand if the swarm moved in with a virgin queen that was required to go out and mate before starting to lay eggs, it could take up to three weeks before the swarm could be considered a nucleus hive. More typically a nuc is the result of a split accomplished by the beekeeper for the variety of reasons covered in last month's issue.

#### **Purposes of Nucs**

As stated in last month's article one of the key reasons to do a split is that it may preclude the hive from swarming. By pulling frames from an established over wintered hive the beekeeper is creating a nucleus colony that can become a new hive. With at least a frame of brood and a frame with pollen and nectar as a food source, the split can be considered a nuc, particularly if the original queen is also moved to the starter nuc. Once it is seen that the queen is laying eggs and established in the nuc, it may be put up for sale, used as a resource for other hives or simply left to become its own new hive. As published in the recent May 2024 issue, my "Nucleus Hives" article stated any nuc for sale should contain at least two full frames of brood laid by the attending queen and a frame of nectar and pollen as a minimum. If the beekeeper is making splits it is up to the beekeeper to decide if the original hive will get a newly purchased queen or be allowed to make their own new queen from an existing egg, larva or queen cell. A donating hive or the receiving nuc allowed to renew its own queen may take up to five weeks before it becomes a fully functioning colony of bees. All this was covered in greater detail in the previous May issue. Likewise the use of a double deep nuc as a standin swarm trap was covered in that issue.



Double stack four frame nucleus hive

## **Different Nuc Systems**

Nucs can come in many shapes and sizes. My first attempt at working with nucs was to simply split a ten frame super down the middle with a divider so that I had two four frame nucs. With a small workshop behind my garage I built several four frame nuc boxes to sit as second story four frame deep supers over the split ten frames super with only four frames on each side below. The key is to be sure there is no way for the neighboring queens to get in touch with each other. I have had no problem

with both nuc openings being toward the same front side of the split super provided that both nuc populations are of relatively the same strength. I have had side-by-side nucs survive through the Winter in this arrangement. Working with four frame nucs provides many options. After a split this past Spring it became apparent that one of my hives did not replace a removed queen. Since it was a strong population of bees that had not accepted a newly acquired queen I decided to try something a bit different and marry a strong double stack four frame nuc between the two ten frame supers. I did this by placing the two four frame nucs adjacent to each other over a newspaper sheet which was over the bottom ten frames super.



Four frame nucs sandwiched between two ten frame supers

My hope was that the residing nuc queen would take over the entire arrangement. I then placed another piece of newspaper over the adjacent nuc boxes with the second ten frames deep over it. Both sheets of newspaper had several small knife slits in them to give bees a place to start to chew through the newspapers. A week or so later the bees were working together and I removed eight of the least filled or pollen saturated frames so all was condensed into two ten frame deeps. Since the original hive had a good start on two honey supers that had been on the original two super hive, which had not replaced a queen, the addition of the two story nucs that replaced the queen became an even stronger hive. The result was that I was able to remove two fully capped honey supers by early July from this co-mingled hive/nuc arrangement. That hive continued to produce additional full honey supers taken later in the Fall. In another instance I was a bit lazy one Summer and left a double ten frame deep with mostly empty frames sitting in the middle of my bee yard. Although I checked it for hive beetles or wax moths each time I attended to the apiary, I always ran out of time to disassemble it. Then one day I noticed bees bringing pollen into the "empty" hive. To my amazement I had a swarm that decided to move into the frames in these mostly "empty" supers. Since the queen was already laying and unmarked, that clue told me she was not from my hives as my queens were all marked. I gained a

nucleus colony without even having to catch the swarm, they just moved in.

Continuing with different trials I once set two hives tight against each other and placed a queen excluder over the adjoining portions of each hive. The remaining open halves of the hives below were covered with five frame nuc covers. The idea was that perhaps two earlier split hives could more readily fill honey supers faster if working together. Above this I placed two honey supers over the middle half of each hive below so that worker bees from both hives could work the same honey supers.



Two queen hives that turn into a triple

Since there was a top entrance in the inner cover open to the honey supers the bees could also enter and exit there if they chose. One day inspecting the honey supers I noticed I had a third queen laying eggs in the honey supers. Whether this was a small third swarm that moved in, a thin virgin queen that had squeezed through the central queen excluder or the bees moving an egg from one of the hive cells below, I will never know. But I had another nucleus hive which I quickly moved into their own nuc replacing the honey super brood frames with empties to allow the two hives below to continue to produce honey and the honey super brood and egg frames to become their own nucleus hive.

Another way to use small nucs is in what may be called a queen castle. Queen castles come in different shapes but their main function is to be for nurse bees to care for the new or virgin queen while she goes out on mating flights. At some point when she begins to lay eggs it indicates the presence of a newly mated queen that can be sold or moved into a new queenless nuc or hive. I like the ten frame super queen castle that has four distinct separated areas each holding two frames. Much like the two four frame nucs made from a ten frame deep each section must have a separate entrance for those bees and be divided so queens cannot get to each other. In this manner a newly emerged queen can go out to mate and develop her egg laying skills before being moved to a new nuc/hive or sold. If using this method one frame should have a mostly empty or empty drawn comb side so the new queen has a place to lay eggs while the other frame

has a supply of pollen and nectar with some portion of the frames covered in larva and capped brood to encourage a laying queen. The key element with any nuc starter hive is to keep a close watch on it as emerging brood can increase the nuc population at an astounding rate. Just as overcrowded hives can be expected to swarm, the same is true of an overcrowded nuc if not given enough space. I have found that having a few nucs available as a resource reserve throughout the year provides me many more options to maintain my own self sustainability and/or provide another small income source if sold.

#### Winterizing

The act of winterizing one's hives actually starts in mid to late Summer. This is when the mite population starts to expand and the reproduction of additional worker bees begins a slow decline. Keeping mite counts to a minimum through late Summer and Fall will go a long way toward the success of the hive surviving through the Winter. Mite management techniques were covered in September's issue. Feeding is another component of getting ready for Winter. That was also covered in last month's issue. A two parts sugar to one part water syrup mix is the accepted norm until night temperatures routinely fall below freezing. Once that happens I like to switch to granulated sugar placed over waxed parchment paper over the top frames of the brood chamber. By this point all honey supers will have been removed, cleaned out by the bees and put into storage. The easiest way to have bees clean out extracted honey supers is to place the empties over the inner cover and under the outer cover. In this way the bees come up through the inner cover center hole and remove any remaining honey from the honey supers. This works particularly well when the honey super did not come from the extraction hive it was originally placed over. Bees are much less likely to begin storing more honey in supers to be cleaned out as it seems pheromone from the originating hive creates a sense of robbing from the "to be cleaned out honey super" rather than an urge to store more honey. Additionally, only the bees in the hive can get to the super without fear of attracting wasps or other bee robbers.

Another factor in winterizing is when to use blanket, sleeve or some other type outer insulation. This is probably the least of Winter concerns as bees have survived our colder Winters without this protection in many apiaries. It is just another insurance measure and may have more to do with making the beekeeper feel better than its benefit for the bees. One aspect of insulation that I do strongly believe in is a one or half inch piece of insulation that sits inside the outer cover and over the inner cover. I use this insulation piece cut such that it fits neatly inside the outer cover year round. It works just as well during Summer to temper the heat from the hot Summer sun emanating through the outer cover. I also like the use of a homemade Vivaldi spacer over the inner cover. This is just a two to three inch spacer over the inner cover with four or five holes drilled on the short sides of the spacer. Cover the inner cover hole with screening so bees cannot get into the several layers of burlap placed in the spacer that wicks up condensation from the hive. The spacer holes on each end allow circulation to dry the burlap out.

If not already in place it is also a good idea to put in the entrance reducer to provide less space for Winter drafts and also cut down on space for voles or mice to enter. As Fall changes to Winter, it may also be a good idea to use robbing screens if the apiary has had previous problems with robbing in the Fall. Any mouse guards placed on the hive in the Fall may remain until Spring as long as bees have an adequate opening to leave and return on Winter cleansing flights. Naturally, Winter lends itself well to a time for any cleanups, painting or preparations for the next season.



Insulation over Vivaldi spacer over inner cover over sugar feeder over deep super

## **Queen Rearing**

I left queen rearing as the last item since it can be very easy if time is not of the essence or it can be a bit more challenging if raising queens becomes a side endeavor with any of the methods suggested that follow. When I do splits I generally allow the portion that does not have a queen to make their own new queen. As long as a frame of brood with eggs and one to three day old larva is present the bees will choose a cell to make a new queen. They can be assisted by scraping the bottom third of a cell and a few cells just below it away to make room for a queen cell. I like to do this on several three day old egg cells as well as the smallest larva cell or two. The queenless bees will generally make three or four queen cells using this technique. If queen cells are made on different frames one of the frames can be moved to an additional starter nuc. Although it takes the new queen four to five weeks to mature, mate and begin laying eggs I have had good luck with this method. One could also try grafting queens, not as hard as it appears; use the Hopkins method with a horizontal frame over a recently queenless super, or try the Doolittle method with a nuc and queen excluder over an existing hive. There are also graftless methods including the Cloake board, the Miller or the Jenter system. Raising queens can be done successfully using any of these methods. As with all things in beekeeping, applicable steps by the developer should be researched and followed.

#### Conclusion

Complete articles could be devoted to any of the previous seven individual sub-topics as the new beekeeper becomes more proficient in the trade. It should be obvious that all of the areas are linked to each other and it is often difficult to encapsulate one area without touching on another. I have simply summarized those areas in which I feel the newer beekeeper needs proficiency in order to avoid the necessity to repurchase packages, nucs or queens each year. If a beekeeper becomes a bee manager, learns from mistakes, takes notes to avoid past missteps and strives to improve their techniques, I firmly believe the most basic hobbyist can reach a point of enduring succession with their bees. Once the bees are recognized as an organism and the beekeeper provides adequate support, the struggle for ongoing continuation lessens and beekeeping becomes a very rewarding, less costly adventure.

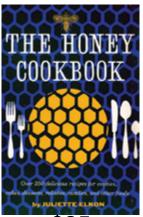


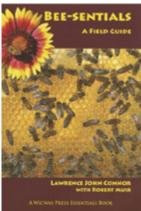
Richard Wahl began learning beekeeping the hard way starting in 2010 with no mentor or club association and a swarm catch. He is now a self-sustainable hobby beekeeper since 2018, writing articles, giving lectures and teaching beginning honey bee husbandry and hive management.

## www.wicwas.com • postpaid in USA • 1620 Miller Rd. Kalamazoo MI 49001









\$28

\$25

\$28

Quantity Discount for six or more of a title: 40%



## **Bill Mares**

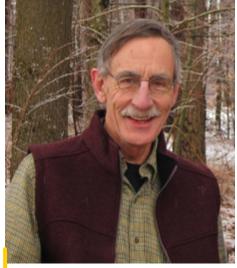


## An Interview Reflecting on Bees, Life and Death

https://www.beeculture.com/bill-mares/

Only about 25 percent of the beekeepers in America operate on a commercial or semi-commercial level (25 or more colonies), and they manage roughly 97 percent of the nation's bees. All the rest of the nation's apiculturists are backyard beekeepers that tend bees part-time, managing less than three percent of the nation's bees. Attempt to look up historical information about beekeepers and there is plenty to be found on the minority of large commercial operations. There are articles, old catalogs, census records, old invoices and honey labels that all help document such operations. Meanwhile, there is a paucity of information on the vast majority of beekeepers: the weekend warriors. Even here in the pages of Bee Culture we have a tendency to report on the large beekeeping outfits that manage hundreds, if not thousands of colonies as opposed to small operations. In an effort to help instill some balance and provide grist for future historians that may seek to document the kind of activities and motivations that animate the majority of today's beekeepers, I sat down with Bill Mares of Burlington, Vermont on July 23, 2024 and discussed his life which has among many things encompassed: teacher, legislator, reporter/photographer, author and beekeeper.





Bill Mares

Bill has never been a large-scale beekeeper, reaching a peak of about a dozen hives at most, but has kept bees pretty consistently since 1976. He has been a stalwart supporter of the Vermont Beekeepers Association over the years and he won 'Best of Show' for the comb honey division at the Vermont Farm Show in 1999. Much of what follows is in his own words, edited slightly for clarity and length.

Bill expressed a deep appreciation for the honey bee and what they can teach us: "...they're such wonderful creatures. I came to that conclusion very early on and I tried not to be preachy along the way. I tried not to beat the drum and say 'everyone should raise bees' but I was more than happy to tell anyone why they are so much fun. This is citizen science. You get to use all five senses. They produce this wonderful product and they never stop being interesting. As Kirk Webster says, 'the bees are the color and everything else is black and white.' I thought that was a killer encompassing of the pleasure of beekeeping: your interactions are always changing, and you are not in charge. The bees swarm because they are telling you they're in charge. Your job is always to stay a step ahead and if you miss the bus, you have to wait for the next bus. So they are always humbling. That's why brother Adam and the other monks kept them as well as for practical reasons, as

Jonathan Swift says 'the sweetness and the light.' If you let your guard down you lose a step...they remind you that you know some, but you don't know all. It's like life. You do the best you can, you're grateful for the experience, you're grateful for the products, and any time you stop and say what a smart person I am, your fooling yourself. You're wasting your time because the point is to be working with the bees and not to be saying, 'they are all mine and I snap my fingers and they do what I want.' As a biological unit, they have a mind of their own and you never understand it all, so they are a wonderful teacher of humility."

Bill Mares got his start in beekeeping like many do, with the help of a mentor. Bill's mentor was Arnold Waters, a well-respected Vermont beekeeper at the time who took Bill under his wing and showed him the ropes. "I started hanging out around him (Arnold) and I knew enough to ask questions when I needed to but to also keep my mouth shut and take notes so I was never an intrusion on him or a silly worshiper... Arnold was interesting on an intellectual level and on an accomplishment level. How could I not be respectful of an expert? An expert who would answer your questions any time you want. An expert who would drive 35 minutes to show you how to get into a hive and remind you of the mistakes you were going to make and not to worry about it as long as you remembered the answer...I would have ultimately loved to have emulated him in his hive-side manner."

Bill has had many chances to practice his mentor's hive-side manner through his work with his state beekeeping association. Not only has he sat on the board of the Vermont Beekeeper's Association (VBA), he served as President of the VBA, and was named Vermont Beekeeper of the Year in 2013. Bill taught over a thousand beginner beekeepers over the years through the beginner class he co-taught with other VBA members. Bill and I administered the Vermont Certified Beekeeper program for many years helping to ensure that beginner beekeepers have a solid bee-

BEE CULTURE October 2024

keeping foundation to build upon. Bill has been a prolific author publishing some 20 books during his lifetime. Two of the titles focused exclusively on beekeeping: Bees Besieged published in 2005 and The Land of Milk and Honey: A history of beekeeping in Vermont published in 2020, that I had the privilege of co-authoring with him. At one point Bill worked closely with Central American coffee growers to help them supplement their coffee income and improve their coffee pollination by helping them incorporate beekeeping into their operations. Bill has also been a sought after speaker for the Vermont Humanities Council on the topic of honey bees and Vermont's beekeeping history.

Bill Mares also served as Vermont's delegate to the Eastern Apicultural Society (EAS) for a number of years. As Bill tells it, one of the highlights of his beekeeping journey was when he served as President of EAS and helped to bring their annual

beekeeping conference to Vermont in 2012. "I thought that I had really arrived with a national reputation because I got to be President (of EAS) that year and I got to sing the praises of Vermont and brush shoulders with Kim Flottum and Tom Seeley, and other giants of both the industry and the academic community and have my name appear next to theirs. Choosing a team from the EAS board gave me a certain satisfaction and always remembering that everyone else knew more than I did, but I still could supply this kind of glue to the ultimate product. I was smart enough to choose a really good group of Vermont people, first and foremost with Diane Meyerhoff who wasn't even a beekeeper, but she was trained as a community organizer and I mostly let her take over because there was a good template for how to run these events. You didn't have to reinvent the wheel...I never tried to tell any of these giants what to do and I got a huge amount of help from Kim Flottum, Kathy Summers and Dewey Caron. I'd say they were the professional musketeers of the venture. I was always happy to defer to them as they had done this for twenty years. Why should I reinvent the wheel? I was just happy to absorb myself in the larger entity of EAS and enjoy it. Write a good welcome speech; a good farewell speech; choose a good aidede-camp in Diane; and hang out and let everyone else do the work."

When I sat down to speak with Bill, he had been diagnosed with late stage liver cancer and his doctor had indicated that he had a very short time left. At 83 years old he was exactly the same age as his mother had been when she died and he shared a thought process similar to what she had gone through during her transition in life. "She decided, probably at the age of 55-60, and she told everybody but not in a preachy way, 'when I cease to appreciate the

Bill Mares cuts down a swarm in Burlington, Vermont.



gift of life, I am out of here and you just get out of my way.' Then she took the next steps which were to go to the Hemlock Society and find out what their options were as they had a dozen or so options, this cluster of drugs, that cluster of drugs, very clear with active ingredients and then the brand name. She chose a sleeping pill, or a component of a normal sleeping pill. The Hemlock Society was very helpful and said 'you're going to take X number of pills and this is how you deliver them to yourself,' like a recipe. She put them up on the shelf in the kitchen, out of sight and reach of children and she renewed the prescription every three years as it required and she told us all this. She said this is what I am doing and she lived by that for some 20 years... and in April of 1990 she sent out the word 'it's time, I'm going.' So she invited a family friend who was a nurse to come down from Colorado to administer this and since she had kept renewing the pills, she knew they were going to do their work. She says 'I'm putting them in Häagen-Dazs® ice cream, I'm sorry I'm not going to do Ben & Jerry's even though you want me to.' So it became a family joke, and she sat one afternoon in bed and she put the pills in her ice cream. It took about 15 minutes. She laid back and went to sleep and that

was it: a perfect death. She'd lived a full life. She had no regrets. She had affected and influenced the world around her and she demonstrated, this is what you do. You don't wait for the medical establishment to keep you alive, or the lawyers, God forbid, or guilt ridden family. We'd all been on the train for 20 years. We'd all agreed with this process, so she had no guilt and it was a logical process. This was before our modern death with dignity laws so she had to do this undercover but she had a good doctor who had a good wink...It's so civilized and you're in control. The state is not telling you, 'you can't die'...and the family is in total support and you're surrounded by love."

Bill Mares followed in his mother's footsteps and left peacefully for that great apiary in the sky on July 29, 2024 a happy person, surrounded

by his family, at the time, place, and means of his own choosing.

Ross Conrad is a beekeeper living in Middlebury, Vermont. Ross endeavors to manage his bees in as an environmentally sustainable way as possible and works to share natural/organic beekeeping techniques with others through his writings, workshops, mentoring, and classes.



Bill Mares in his backyard contemplating the season's honey harvest





## **Subscription FAQs**

1. What is the difference between the print and digital magazine choices?

**PRINT ONLY:** Hard copy mailed to your address each month

DIGITAL ONLY: Can be accessed and downloaded through our website on your computer, tablet or phone

DIGITAL AND PRINT: hard copy mailed to you each month AND access to digital version plus digital back issues

2. When will my first issue arrive? Bee Culture Magazine is published monthly. Please allow up to 6-8 weeks for delivery of your first issue. International subscriptions will take longer.

## 3. When should I renew my subscription?

Look at the mailing label on the back cover to see how many issues you have left! Send in the renewal card on the right hand side of this page, or renew online.

We recommend renewing if you have 3 or fewer issues remaining.

**4.** Address change or cancellation? Please email info@beeculture.com with your request.

5. How do I subscribe? Send a check along with this ad to: Bee Culture Magazine 623 West Liberty Street Medina, OH 44256

-orSubscribe any time online at www.beeculture.com

Scan the code!



| U.S.             |     |
|------------------|-----|
| <b>SUBSCRIPT</b> | ION |
| RENEWAL          |     |

Name (Print)

Phone Number

Email Address\*

Required for Digital Subscriptions

Address

City

| Select your choice: |   |  |  |  |
|---------------------|---|--|--|--|
| □ \$24              | 12 issues <b>DIGITAL ONLY</b> Edition       |  |  |  |
| □ \$44              | 12 issues <b>DIGITAL AND PRINT</b> Editions |  |  |  |
| □ \$70              | 24 issues <b>DIGITAL AND PRINT</b> Editions |  |  |  |
| □ \$34              | 12 issues <b>PRINT ONLY</b> Edition         |  |  |  |
| □ \$62              | 24 issues <b>PRINT ONLY</b> Edition         |  |  |  |
| □ \$86              | 36 issues <b>PRINT ONLY</b> Edition         |  |  |  |
|                     |   |  |  |  |
|                     |   |  |  |  |
|                     | State Zip                                   |  |  |  |
|                     |   |  |  |  |
|                     |   |  |  |  |

| ¦U.S. |         |
|-------|---------|
| NEW   |         |
| SUBSC | RIPTION |

## Select your choice:

- □ **\$24** 12 issues **DIGITAL ONLY** Edition
- □ **\$44** 12 issues **DIGITAL AND PRINT** Editions

Prices valid through Dec 31, 2024

- □ \$70 24 issues **DIGITAL AND PRINT** Editions
- □ **\$34** 12 issues **PRINT ONLY** Edition
- □ **\$62** 24 issues **PRINT ONLY** Edition

|  | □ \$86 36 issues PRINT ONLY Edition |     |  |
|--|-------------------------------------|-----|--|
| Name (Print)                                 |                                     |     |  |
| Address                                      |                                     |     |  |
| City   | State                               | Zip |  |
| Phone Number                                 |                                     |     |  |
| Email Address* *Pagging for Digital Subscrip |                                     |     |  |

## CANADA AND INTERNATIONAL SUBSCRIPTIONS

## Select your choice:

- □ **\$24** 12 issues **DIGITAL ONLY** Edition
- □ **\$79** 12 issues **DIGITAL AND PRINT** Editions

Prices valid through Dec 31, 202

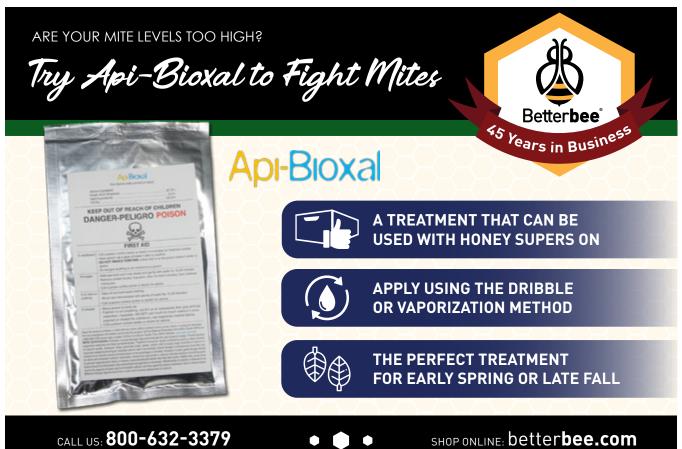
- □ **\$158** 24 issues **DIGITAL AND PRINT** Editions
- □ **\$74** 12 issues **PRINT ONLY** Edition
- □ **\$148** 24 issues **PRINT ONLY** Edition
- □ \$222 36 issues PRINT ONLY Edition

| Name (Print) |       |     |  |
|--------------|-------|-----|--|
| Address      |       |     |  |
| City         | State | Zip |  |
| Phone Number |       |     |  |
|              |       |     |  |

Email Address\*
\*Required for Digital Subscriptions

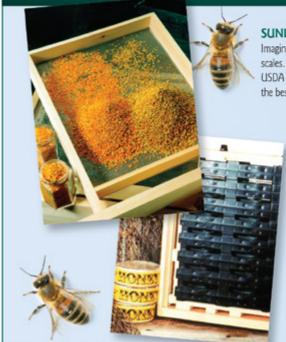
Prices valid through Dec 31, 2024





# Harvest The Best...

## with SUNDANCE POLLEN TRAPS and COMPLETE ROSS ROUND SUPERS.



#### SUNDANCE POLLEN TRAPS

Imagine the cleanest pollen available with no heavy lifting, chalkbrood mummies or risk of foulbrood scales. There is no substitute for the **Sundance Trap** quality and cleanliness. Leading experts from the USDA and universities as well as commercial beekeepers and hobbyists agree that **Sundance Traps** are the best pollen traps available. <u>It's NOT a pollen trap</u>, <u>unless it's a Sundance Trap!</u>

#### COMPLETE ROSS ROUND SUPER

Produce comb honey with no dripping from cut edges and no liquid honey in the consumer package with **Ross Rounds** equipment. Easily shipped or delivered, stocked on shelves, purchased and taken home without danger of leaking. Enjoy providing locally grown, unprocessed, all-natural honey with a complete **Ross Rounds Super**.

For more information visit www.RossRounds.com.
For dealers near you please email sales@rossrounds.com.





ROSS ROUNDS & SUNDANCE ARE REGISTRERED TRADEMARKS AND ARE A DIVISION OF FINGER LAKES BEE COMPANY LLC. ALL RIGHTS RESERVED.



FAMILY OWNED AND OPERATED SINCE 1976
MANUFACTURER OF QUALITY WOODENWARE

IT'S HONEY TIME!



BOTTLING



JARS



**EXTRACTORS** 



SUPERS



UNCAPPING

WE ARE PROUD TO BE CARRYING SAF EXTRACTORS.

DIRECT FROM THE MANUFACTURER!

TORS, WWW.MILLERBEESUPPLY.COM

496 YELLOW BANKS RD

N. WILKESBORO, NC 28659

OPEN 8AM-4:30PM, JUNE THRU FEBRUARY



## To Bee or Not to Bee Dialogues: Part 1

**Dr. Tracy Farone** 



I recently was contacted by Dr. Sabo, Utah State Field Veterinarian, Department of Animal Industry, Utah Department of Agriculture and Food regarding discussions they are currently having, attempting to solve issues revolving around the accessibility of antibiotics for use by beekeepers for honey bees.

Dr. Sabo's initial inquiry was this:

"We at the Utah State Veterinary Office, have been approached about attempting to solve an issue challenging our apiarists. Due to our ever-expanding apiary industry here in the Bee Hive state, in combination with an ever-decreasing population of veterinarians with the training, interest, and time to visit these establishments to establish VCPRs (veterinary client patient relationships), our bee keepers are having trouble accessing the VFDs (veterinary feed directives) they require. We have a required hive inspection program with a state bee lab and are considering ways to combine this with our veterinary duties. Since, I am sure this is not a unique issue, we are hoping to pick your brains about how these challenges are being addressed across the country. Currently, we are considering:

- 1) Either amending the veterinary practice act to allow a VCPR to be established by our state bee inspectors on behalf of any professionally trained veterinarian.
- 2) The same, except allowing this to apply to only State Veterinarians.
- 3) Not amending the vet practice act, but instead scheduling bee facility inspection trips of state apiary inspectors with the state field veterinarians along to establish VCPRs throughout the state."

My response was to advise against options #1 & #2 because of the legality of going against federal VCPR laws/rules and changing the State's veterinary practice act, wider species implications, and the prescient it could set. The federal definition of the VCPR still dominates. States can add but not subtract at this point.

I suggested some version of #3, that the state vets work with the state apiarists, potentially creating a position or partial position for the state vet/s. Additionally, I would also recommend the state start a program to recruit/incentivize /has an agreement with a just few bee knowledgeable vets across the state to help spread out the load. After a recent Honey Bee Veterinary Consortium (HBVC) board meeting, another suggestion came up that may also be helpful. There is something called a letter of regulatory discretion that can be written to the FDA in conjunction with perhaps the State's Veterinary Board to explain the problem to the FDA, present the current and hopefully temporary proposed solution, and ask that the FDA would agree to not prosecute anyone acting in this exception (veterinarian and apiary inspectors working together to establish the VCPR) for writing a prescription or VFD to a honey bee colony patient/s. It would avoid trying to change a State's veterinary practice act, clashing with the federal laws, and setting a precedent that could affect VCPR with other species.

Considering that what may happen in the Bee Hive state may have implications across the country, I decided to ask a few questions of Dr. Sabo that I may share with the industry While there may not be agreement across the board. It is imperative to start the discussion to find practical common-sense solutions that serve the honey bee industry, are legal

and protect public health. Jenna Crowder, State Apiary Inspector and Diagnostic Entomologist for Utah also asked to present their perspectives on the same queries. Their answers are shared here as well and provide insightful contrasts and comparison.

# Q1: Tell us a bit about yourself, background and how you became interested in honey bees.

Dr. Sabo: "I grew up in rural Ohio and moved to central New York state for undergrad and veterinary school. Although I have never kept bees myself, I have been lucky enough to learn the basics and challenges from a number of friends and clients. My veterinary career after graduation was focused on antimicrobial stewardship, animal welfare, and disease control in production animals of western New York state. When the Veterinary Feed Directive (VFD, similar to a prescription for in feed antibiotics) rule went into place in 2017, I quickly added beekeepers to my list of clients that I helped access and use antimicrobials effectively. In my new position as a state field veterinarian, I maintain those same goals, but for all the animal owners in the State of Utah."

Jenna Crowder: "I am an apiary inspector with the Utah Department of Agriculture and Food (UDAF). I got my start working with other people's bees in 2016, when I worked for Smithers Viscient as a pollinator technician. That role gave me a robust background in recognizing bee diseases, which I carry through to my inspection work today. I love working with bees, almost as much as I love working with the people who keep them. The passion that beekeepers have for their hives' health is what keeps me motivated."

## Q2: Explain the relationship between the Animal Health and Plant Division in your department of agriculture.

Dr. Sabo: "Legally, honey bees are considered a food producing **animal** species. That means that their care, diagnosis, and treatment fall under veterinary scope of practice. However, within the UDAF, the entomologists have traditionally worked within the Plant Division because of their work being focused on managing agricultural pests on plants. Since the entomologists are the in-

sect specialists, the bee inspection program and the bee lab has been placed in the plant division, so that the entomologists do not have to be divided into multiple divisions."

Jenna Crowder: "When it comes to the apiary program, the Animal Health and Plant Divisions share the goal of mitigating foulbrood disease. Foulbrood disease is one of many reportable diseases that Plant Division's apiary staff report to Animal Health. UDAF apiary inspectors are experts in bee disease but are not licensed veterinarians. Apiary inspectors have the knowledge and infrastructure to identify (through visual inspection) and validate (through genetic diagnostics) a Foulbrood diagnosis but cannot write VFDs or prescriptions for beekeepers. When a bacterial disease is identified and a course of antibiotic treatment is recommended by a Plant Division apiary inspector, the responsibility falls on the beekeeper to find a veterinarian who is both willing and able to provide the paperwork (VFD or Rx) for such treatment. This is where an ad hoc relationship between Animal Health and Plant Division is helpful. If a beekeeper cannot get a VFD or Rx through a private practice, they (could potentially) now have the option to work directly with UDAF staff. Animal Health veterinarians are qualified to write VFDs or Rxs. but until recently have lacked the knowledge about honey bees to diagnose bacterial bee diseases. Working directly with apiary inspectors by shadowing apiary inspections is just one of many ways Animal Health Vets can build their bee knowledge."

# Q3: Explain the current challenges veterinarians, state apiarists, and beekeepers in Utah face concerning AFB, EFB, and proper antibiotic use.

Dr. Sabo: "Utah beekeepers have expressed difficulty finding veterinarians who have the training, time, and willingness to travel out to bee yards in order to establish a valid VCPR (Veterinary Client-Patient-Relationship) that is needed for them to be able to legally write a VFD for these producers. On the other hand, Utah has a shortage of veterinarians, especially large animal veterinarians (the type most familiar with writing VFDs). Combined with the lack of education on bee medicine provided during the typical veterinary education, high student loan debt burden, Utah's rural and dispersed geography, and the low price that most beekeepers are willing to pay for this service; Utah veterinarians have overwhelmingly decided it is not economically worth it for them to provide service to beekeepers despite there being a need."

Jenna Crowder: "Current challenges for vets include lacking diagnostic abilities and knowledge of the honey bee as an organism. Additionally, the time commitment of visiting an apiary in person can be burdensome. Challenges for state apiarists include identifying veterinarians who are willing to work with beekeepers. The primary challenge for beekeepers is finding a veterinarian who will work with them at all."

Next month, we will continue the discussion with three more queries and answers provided.

These are pictures of Jenna during some NHBS visits!







# Minding Your Bees And Cues

## Meeting with Minnesota **Beekeepers**

The Minnesota Honey Producers Association\* (MHPA) doesn't like to meet alone anymore. After the tremendous success of the 2023 Tri-State Beekeepers Convention (Minnesota, North Dakota, and South Dakota), MHPA Vice President Liz Renstrom found another adjacent state we could bond with over beekeeping. The resulting joint MHPA-Wisconsin Honey Producers Association (WHPA) meeting was held in Saint Paul, Minnesota this past July. It was another meeting to remember. There were awards, friendly competition, and of course, plenty of talk about bears. And bees. Most importantly, beekeepers from the two border states came together to learn about, discuss, and collaborate on all aspects of the beekeeping industry.

## When Beekeepers Meet

## **Becky Masterman & Bridget Mendel**



https://www.beeculture.com/minding-your-bees-and-cues-26/ Listen along here!

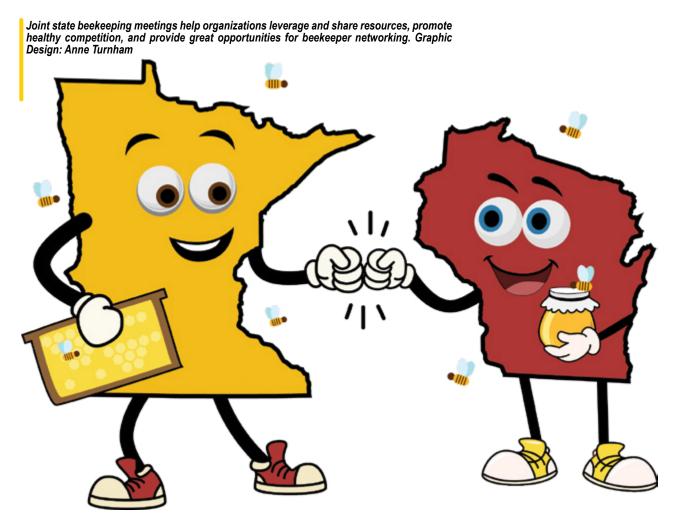
#### Two Mikes

The theme of the meeting weekend was Dr. Marla Spivak, leader of the University of Minnesota Bee Lab since 1992. Two of Spivak's many PhD graduates now work for the USDA and both returned to Saint Paul to deliver keynote talks. Dr. Mike-Simone Finstrom, a Research Molecular Biologist from the USDA Baton Rouge, Louisiana Bee Lab gave two talks sharing work on honey bee breeding and the use of propolis to protect colonies. Dr. Mike Goblirsch is now a USDA Research Entomologist stationed at the Thad Cochran Southern Horticultural Research Laboratory in Poplarville, Mississippi.

Dr. Goblirsch presented one talk on his groundbreaking honey bee cell line research and another on the toxic effects of yellow jessamine nectar.

### **Honoring Marla**

Dr. Spivak was recognized as the 2024 MHPA Beekeeper of the Year. Mr. Gary Reuter, Spivak's Research Technician and Apiary Manager for most of her UMN tenure, gave the award address. While Reuter's delivery was filled with many stories and prompted much laughter, he delivered on sincerity and recognizing Spivak's contribution to the UMN Bee Lab and beekeepers across the country. Mark Sundberg, current





L to R: Gary Reuter presenting the MHPA Beekeeper of the Year Award to Dr. Marla Spivak. Dr. Marla Spivak delivered a talk about Bee Lab and MHPA history. Stephanie Slater, organizer of the Black Jar Border Battle Honey Tasting Contest, Jeff Charnes (overall winner), and Charlie Koehnen (WI winner). Below: The MHPA presented the Bee Lab with a big check (\$100,000) towards the newly established UMN Endowed Honey Bee Chair position.

MHPA President, shared Marla Fun Facts throughout the weekend, and many of us had fun watching Marla look embarrassed (for someone so famous, she remains uncomfortable with fame). While her research on hygienic behavior in honey bees is important, her status as an Aikido Black Belt, or the snow boots she wore to her 1991 UMN job interview, might be more important for the historic record. After all, we remember one of her predecessors, Dr. Haydak, not only for his research, but for his experimental milk and honey-only diet (he got scurvy).

## **Big Check**

The MHPA conventions are starting to get a generous reputation. In 2023, the Minnesota, North Dakota and South Dakota beekeepers and the bee industry raised \$66,000 for Bee and Butterfly Fund Habitat projects in the tri-state area. This year, the MHPA donated \$100,000 towards the now fully funded University of Minnesota Honey Bee Endowed Chair. The five-million-dollar endowment will ensure that the UMN always has a honey bee professor leading the Bee Lab. Spivak's retirement at the end of 2024 and this endowment mean that the search for a replacement will soon commence and the Bee Lab will continue its history as a leader in honey bee research, education, and outreach. The MHPA plans on continuing its support of the UMN Bee

Lab and are looking forward to what the next honey bee professor may bring to the table. Hint to potential applicants: wear snow boots!

### **Sweet Competition**

What's a Minnesota-Wisconsin meeting without a sweet and friendly competition? Convention attendees tasted and voted all weekend to determine which beekeeper brought the tastiest honey to the meeting. A huge congratulations to the Minnesota Honey Producers Association -Wisconsin Honey Producers Association Black Jar Honey Tasting Contest champion and Border Battle Winter, Jeff Charnes of Minnesota. A hearty congrats goes to Charlie Koehnen for 1st place Black Jar Honey Tasting Winner from Wisconsin.

#### **Bear Crazy**

Minnesota and Wisconsin beekeepers have a common emerging challenge: bears. The black bear population is growing in both states and beekeepers are finding that protecting their colonies from damage and death by bears is increasingly difficult. After learning that Wisconsin Honey Producers had a Bear Advisory Committee, Minnesota Honey Producers formed their own group. The Bear Committee Chairs from the two states were given program time to update the attendees on their progress. James Hillmeyer of Wisconsin shared the work their committee has

done to protect apiaries from bear attacks. Highlights include collecting beekeeper reported bear damage data and working with governmental agencies for electric fencing support. Wes Hull from Minnesota shared the organization's website page that was put together to highlight available resources. The two Bear Chairs answered audience questions and discussed next steps that include a more detailed bear damage loss reporting form and potential legislative efforts to help protect apiaries.

#### 2025

The next MHPA meeting is scheduled for July 10-12 in 2025. Our keynote speaker is Dr. Lewis Bartlett from the University of Georgia. We are meeting in St. Cloud, Minnesota. Without a bordering state nearby, we are going to go it alone. If you are a beekeeper who has always wanted to visit the great state of Minnesota, you are officially invited to attend our summer meeting. Like the bees, we know no bounds.

\*Both Masterman and Mendel are active members of the Minnesota Honey Producers Association.

### Resources

https://minnesotahoneyproducers.com/

https://www.wihoney.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 with your convention stories, please send an email to mindingyourbeesandcues@gmail.com









# Bees and Women

## Mrs. Sallie E. Sherman

## Nina Bagley

Sallie Elizabeth Johnson, the eldest of four children, was born in Decatur, Georgia, on January 15, 1843. Her father, Thomas Eubanks Johnson, a farmer, was six years younger than her mother, Abigail Chester Johnson.

Sallie's family moved to Burleson, Texas, an agricultural town when she was around nine years old. Census records of 1860 show Sallie, then seventeen, living with her family in Burleson, Texas. Her father was involved in agriculture, and her mother, Abigail, was the homemaker, tending to the household's needs.

At twenty-one, Sallie married Squire Green Sherman, a man twenty-two years her senior, in 1864. In the Fall of 1864, S.G. Sherman, then forty-three, was mustered into the Civil War.

Sallie's husband returned home from the Civil War in 1865. They lived in Burleson. On November 1, 1866, Sallie gave birth to their son Charles Huber Sherman.

Sallies's husband had been ill. He passed away on October 20, 1869; he was forty-eight. The transition to civilian life was not easy for either Union or Confederate veterans. Physical and emotional scars compounded the problems of adjustment.

Sallie and her son would live with her husband's brother, Dr. William Sherman, and his family. She kept the house for him, cared for his children, and taught school until she could save enough money to find a place for her and her boy, as she called him.

Sallie and her parents moved to Salado Bell, Texas, in the mid-1870s. She had family on her father's side, the Johnsons, who had moved to Salado County, Texas, in 1868. Mrs. Sherman bought a small farmhouse with land. They would have horses, pigs, chickens, bees and a garden there.

In 1879, she bought her first hive from Rev. Willis J. King, who lived a mile from her tiny home on the opposite side of the creek. Sallie had to figure out how to move the hive to her side of the creek. She believed, "If there is a will, there is a way."

Her son was thirteen, so they went at night with a wheelbarrow to move the hive. They securely wrapped the hive in a sheet. They had to cross a swinging bridge with her son pushing the bees in the wheelbarrow; his mother held the box hive. They safely crossed over the bridge. When they returned home, they placed the bees by the house so they could watch them come and go.

Sallie knew little about bees other than that they made honey and could sting you, which is what they did. They stung her so severely that it hindered her from wanting to learn about the little black bees, which she called the little "monsters!"

Not knowing what a smoker was and unaware there were *Bee Culture* books, a friend sent her the February 1875 copy of *The Beekeepers Magazine*. In it, Sallie saw a picture of the "American Hive." She sent for directions and found a carpenter to make her two, for which she paid him ten dollars.

The American hive had a glass window in the back so she could watch the bees at work. It was a moveable frame structure with six boxes laid on top; when filled with honey, each box held nine pounds, making fifty-two pounds of surplus honey.

As time rolled on, Sallie purchased every book she could find: Gleanings in Bee Culture, American Bee Journal, The Apiculturist Bees and Honey, by Thomas Newman, and A Year Among the Bees, by Dr. Miller; Beekeepers Guide, by Prof. Cook, ABC of Bee Culture, by A.I. Root. She increased her hives to over fifty by catching swarms and making splits.

Mrs. Sherman raised her queens and bought queens from all around. Mrs. Sherman even bought an Italian queen from Ohio. She was the first beekeeper in her part of Texas to Italianize her whole apiary. She was so happy to see the golden bees



Mrs. Sallie E. Sherman (1895).

and their pleasant disposition, and she was glad to see the little black bees go. Mrs. Sherman's words: "The Italian bee is as far superior to the little blacks as a Berkshire hog is to a Razor-Back hog, although I am aware there are some who prefer the razorbacks and blacks." (American Bee Journal, July 16, 1896.)

She realized she could make more money selling extracted Honey than combed Honey. She sold movable frame hives with sectional honey for twelve dollars a hive. People came from miles around to talk and do business with her. She sold bee hives, smokers' veils, and equipment to other beekeepers in the area. Sallie raised chickens and sold eggs and honey. She was humorous, independent and had a wit about her. She had no problem selling livestock and vegetables from her garden. If you asked her to sell you a hog, she would. She planted a garden, thinking she would help the bees and get honey. Having a good deal of experience on a small scale, she planted two and a half acres of bee plants: Mignonette, Sunflower, Silverhill, common buckwheat Simpson honey plant and Lucerne. Everything bloomed profusely, but the bees paid little attention. Realizing there was an abundance of wildflowers, which they preferred more, deciding it did not pay to plant anything for honey.

Mrs. Sherman never remarried. Her neighbors revered her as a widow. They all knew how kindhearted she could be, and they could see her love for her son and how well she raised him by giving him a fine education. Her son was not as fond of the bee as his mother was; he was interested in studying to be a doctor like

his uncle. But he was always there to help her catch a swarm, move a hive, help with the honey or take a sting.



Mrs. Sallie E. Sherman's son, Dr. Huber Sherman (1895).

Mrs. Sallie E. Sherman was featured on the front page of the *American Bee Journal* on July 2, 1896, and again on September 5, 1895. The front-page credits five outstanding women beekeepers: No.1, Mrs. Harrison; No.2, Mrs. Wilson; No.3, Mrs. S.G. Sherman; No.4, Mrs. Axtel; and No.5, Mrs. Heater. Mrs. Sallie E. Sherman's picture graces the center of the page.



What was written about Mrs. Sherman: "Mrs. Sallie E. Sherman of Salado, Texas, is probably one of the best-known women beekeepers in the South. Her very countenance bespeaks goodness and kindness of heart. In 1888, from forty colonies of bees, she alone pulled six thousand pounds of Honey, extracted, and a hundred pounds of wax. Though she seldom writes, her bee articles are fascinating and entertaining" (American Bee Journal, September 5, 1895).

At her local county fair, Mrs. Sherman had 87 pounds of bright, beautiful wax in the shape of a pyramid on display. Mrs. Sherman was particularly good at handling and melting wax. She would make her wax molds herself. Mrs. Sherman often reminisced how much fun her brothers and sisters had helping their mother as a young girl, bleaching and sheeting the bees wax so their mother could make wax flowers and candles from the bees' wax.

In the Summer of 1893, she traveled to Chicago to see the honey shows at the Chicago World's Fair. She would meet up with Mrs. Lucinda Harrison from Peoria, Ill. Prominent beekeepers from all around entered their bee products and attended the fair, which lasted six months, from May to October. Mrs. Sherman said, "I always captured the premiums for wax at all the fairs I exhibited" (American Bee Journal, August 20, 1896). Throughout her lifetime, she was a dynamic woman and well deserving of her picture on the cover of the American Bee Journal 1895 as one of the five women to represent beekeeping for women!

Over the years, studying *Bee Culture* had given her a comprehensive book on nature. What a precious study it had been for her; it had opened avenues she had never dreamed of.

In the fall of 1895, Mrs. Sherman advertised in the American Bee Journal: "Home in Sunny, Texas." Being all alone and wanting to go live with her son in Dallas, Texas, who was also alone, she decided to offer her home for sale and everything that goes with it just as it stands. Fifty colonies of Italian and Hybrid bees, two honey extractors, two wax extractors, everything needed in a first-class apiary; a good six-room dwelling house with two galleries, Poultry Crib, and stables. Cowshed,

horse and buggy and a buggy house; Good young orchards of forty trees peach, pear, plum, and mulberry; five acres of land, with a tank cistern well and water. All the furniture, the stove, and the carpets were all for sale for two thousand dollars.

In Mrs. Sherman's words: "But alas! all things earthly have an end. So, I and the precious, little, God-given, nectar-gathering honey bees have separated. They are all gone to a new home, and I, too, will very soon have to leave this dear, sweet modest home. In a few weeks more, I, too, will go for Dallas, my future home" (American Bee Journal, August 6, 1896, p.502).

Mrs. Sherman's son became a doctor; she lived with her son until April 10, 1901, when she passed away at age fifty-eight from heart failure. Mrs. Sherman is buried in Burleson Johnson Cemetery beside her husband, S.G. Sherman. Her son, Doctor Huber Sherman, married Mary Estol Willingham in 1905. He passed away on August 27, 1927, when he was sixty-six. He is buried next to his mother and father in Burleson Johnson Cemetery, along with his wife Mary.

While researching Mrs. N. L. Stow (August 13, 1896, American Bee Journal), I was surprised to find an article to be continued by Sallie E. Sherman. After six years of searching, I finally found what I needed, and yes, indeed, she did not author many articles on beekeeping. In 1896, she wrote about her bee experiences for the American Bee Journal, which gave me an insight into who she was. A woman of remarkable resilience, she proved her strength and independence. Her ability to pick herself up from adversity and provide for her son is a testament to this woman's determination and strength.

"Life is more to me than it could have been without the little, busy bees." Mrs. Sallie.E. Sherman (*American Bee Journal*, August 6, 1896, p. 502).





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.









# **American Beekeeping Federation Focus**

Debbie Seib, Vice-President & Legislative Chair



## Have We Abandoned the Legislative Agenda?

As the elected Vice-President and Legislative chair, I can assure you we have not abandoned the legislative agenda. The ABF Legislative Committee meets every month to discuss industry issues and what can be done to impact them. At the beginning of 2024, we created a list of issues affecting our industry. While you are aware there are many issues, we needed to limit the list in order to be able to focus on key ones we felt ABF could make an impact. We chose the following

- Fake Honey: Standard of Identity
- H2A Issues
- Almond Pollination Issues
- Non-indigenous Pests
- Low Honey Prices
- EPA/USDA Pesticide Issues
- Conservation

- Forage on Government Lands
- Trucking Issues
- Honey Bee Health in North American

As you are aware, things move slow in Washington; however, we still continue to push our agenda. ABF officers, past and present, were in Washington, D.C. the second week in June meeting with senators and representatives to voice our concerns on industry issues. These were our "Asks":

• First: We would like a 30% increase in funding to specifically target research on the Tropilaelaps mite heading our way. We made it clear; we do not want to reduce other research funds for this. This 30% equated to \$9m. This amount was the same that the other national association made as well.

 Second: We would like \$500k to keep the USDA Honey Bee & Pollinator Research Coordinator, Office of Chief Scientist. Currently this position is being filled by Elizabeth (Izzy) Hill. This was the same request made by the other national association as well.

Both associations had the same "Asks" as we are focusing on the two biggest threats to our industry and it shows a united front to our legislative branch

At each office, we left this document that included 2024 Legislative/Regulatory Issues from ABF.

# Farm Bill I. The Emergency Livestock Assistance Program (ELAP)

The ELAP program administered by USDA is the sole disaster pro-

gram available to U.S. beekeepers. Our industry does not have traditional commodity support programs or traditional RMA crop insurance programs to rely on in case of disastrous loss. ABF asks the Congress to reauthorize the ELAP program for honey bees. Beekeepers have been eligible for ELAP loss payments since the 2008 Farm Bill.

ABF supports the Thune-Lujan Livestock Disaster Assistance Improvement Act and supports the inclusion in the Farm Bill. The bill sets a statutory normal bee mortality rate at 15%. It also standardizes the ELAP payment amount and expands the eligibility of the program to include coverage for drought-related losses including costs for transportation of bees, feed and resulting honey crop loss.

ABF supports an exemption from the AGI limitation for farmers that receive 75% of their income from farming or related farming practices and support its inclusion in the Farm Bill.

## II. Honey Integrity Issues Mentioning Congressman Armstrong's HIVE act

U.S. honey producers provide a fraction of the American consumer's demand for honey. The industry is in a constant state of vigilance with foreign honey producers to ensure that their imported product is safe and that its quality and origin are prominently identified and labeled, with "manufactured" or "synthetic" honey clearly labeled as such. We support all efforts during the farm bill negotiation to ensure a consistent federal Standard of Identity (SOI), a clear and easy to understand country of origin label requirement to greatly improve product traceability, transparency, and testing. ABF supports the efforts of Congressman Armstrong (R- ND) in his efforts to introduce the HONEY Identification, Verification and Enforcement Act (HIVE Act).

## III. ARS Honey Research Authorization

ABF supports the extension of the authorization of the USDA ARS honey bee research labs. The core of these research funds directed to the ARS bee labs in Beltsville, MD, Baton Rouge, LA, Tucson, AZ and Davis, CA. These labs are underfunded, and we are seeking a significant increase of

\$9 million in FY2025, given the serious threat of emerging pests.

## IV. Honey Bee Research Coordinator Position at Office of Chief Scientist, USDA

ABF supports the extension in the farm bill of the 2018 authorization of the USDA Honey Bee and Pollinator Research Coordinator established in the 2018 farm bill and the funding necessary to support the functions of this office to all beekeepers and all pollinators.

## V. Conservation Issues

Support direct funding for USDA projects where managed bees are part of the efforts toward reforestation and other USDA conservation and climate efforts throughout the Department. Improve the amount of pollinator friendly acreage included in FSA and NRCS conservation programs. Include in these efforts the Honey Bee Health Coalition recommendation on seed mixes for CRP. Include honey bee recommendations in new regenerative farming funding /grants to support CRP funding for marginal lands & pollination plantings.

#### VI. APHIS Bio-Controls

Instruct APHIS to conduct a full Environmental Impact Statement (EIS) pursuant to NEPA on tallow mitigation before finalizing any permit decisions for biocontrol. Supportive language in FY 23 & 24 Appropriations.

## VII. Public Lands Access for Honey Bees

ABF supports all action by the Congress to assist in improving the access to federal public lands (U.S. Forest Service and Bureau of Land Management) to beekeepers by providing guidance to local federal land managers to approve multi-year beekeeper permits and to ensure honey bee access to federal public lands is prioritized.

## VIII. Canadian Border and U.S. Honey Bees

Encourage the opening of the Canadian border to shipments of U.S. packaged bees (with agreed to protocols).

# 2025 Appropriations I. Honey Bee Research Funding at ARS

The beekeeping industry is seeking a \$9 million increase in funding for honey bee research at ARS/USDA research labs and cooperator labs in FY 2024. Specifically targeting research to prevent the introduction and control of the Tropilaelaps mites. The introduction of this mite to the U.S. and North America is the biggest threat to honey production and agricultural pollination our industry has faced in decades.

## II. Honey Bee Research Coordinator

Support funding the USDA Honey Bee and Pollinator Research Coordinator position within the Office of the Chief Scientist at USDA at no less than \$500,000 to support the coordination of research activities across the Department of Agriculture and support establishing this position & funding in the USDA budget submission.

#### III. ELAP

Ensure ELAP reimbursements to beekeepers are market-based per hive are established and maintained. Restore the expected mortality rate to 15% or lower for the purposes of administering the program (included in both FY'22 and FY'23 Appropriations).

### IV. APHIS

Instruct APHIS to conduct a full EIS on tallow mitigation efforts before finalizing agency decisions (highlighted in FY'23 Appropriations)

## Other Legislative Issues of Interest to ABF I. DOL H-2A Regulations on Wage Rates

Support all efforts to ensure DOL labor rates for H-2A workers remain competitive to avoid a rapid reduction in honey production and pollination services that would result from a drastic increase in labor costs to honey producers. Support legislation to prevent current H-2A wage regulations.

## II. House Ag Committee Task Force on Ag Labor

ABF supports the efforts by the Chairman of the House Agriculture Committee establishing a Bi-Partisan Committee Task Force on Agricultural Labor. ABF urges Congress to move forward on this recommen-



dation made by the House Task Force.

#### III. Trade Legislation

ABF supports current efforts to reduce the trade of imported honey that does not meet established standards & certifications.

ABF has signed Letters of Support for Loss and Management Survey, The One Bee Initiative, Precision Pest Management and IR-4 Integrated Solutions Project. Our goal is to encourage funding for research that

focuses on honey bee health and stability. We also signed the letter to Congressional leadership in the House and Senate on the need to pass the farm bill.

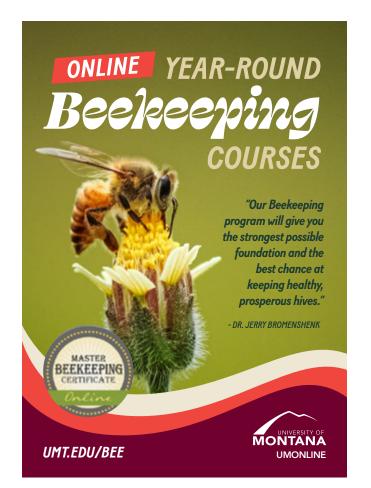
While it is important for us to focus on Legislative Issues, it is also important for us to be in touch with our membership. ABF represents beekeepers of all levels. Our membership continues to increase with our goal to hit 1,000 by year end. Our new members and those that have been members for years, are reaching

out to us as they want to be a part of an industry that is positive in its message. George Eiden is 94 years old and been a member since 1962. While many of our older members are no longer able to attend our conferences, they remain loyal members because they believe "We are all in this together".

Speaking of our annual conference, planning for our 2025 Conference and Tradeshow is well underway. The Keynote speakers have confirmed; Dr. Marla Spivak from University of Minnesota, Dr. Geoff Williams from Auburn University, and Dr. Scott McArt from Cornell University. The agenda is complete with our three tracks and over 45 vendors have committed to be in our Tradeshow. This is our annual event that brings beekeepers of all levels together along with industry researchers and apiary inspectors. For the latest information see our website at: https://abfnet. org/2025-abf-conference/ BC

Feel free to contact me to discuss any of the above topics at **seibshoosierhoney**@ yahoo.com













# HiveAlive EZ Feed Super Syrup

THE NEW FAST & EZ WAY TO FEED BEES!



READY-TO-FEED 2LB POWER POUCH No Mixing, No Feeders, No Mess!

## **Nectar-like Profile, Designed for Bees**

High quality sugar source with optimal sugar profile for bees

## **Enriched with HiveAlive Supplement**

Boost bee health with our tried & tested feed enhancer

## Ready-to-Use

No need to add water - easy, fast & clean bee feeding

Don't miss out! Available online on usa.hivealivebees.com

SET A TABLE THAT WILL LEAVE YOUR GUESTS **BUZZING!** 

# HONEY BEE FLATWARE

TAKE 10% OFF
HONEY BEE FLATWARE WITH
PROMO CODE BEECULTURE10



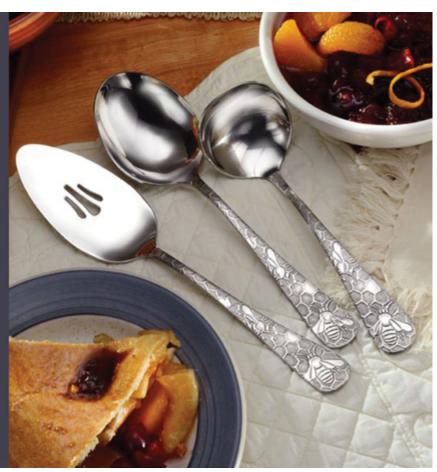


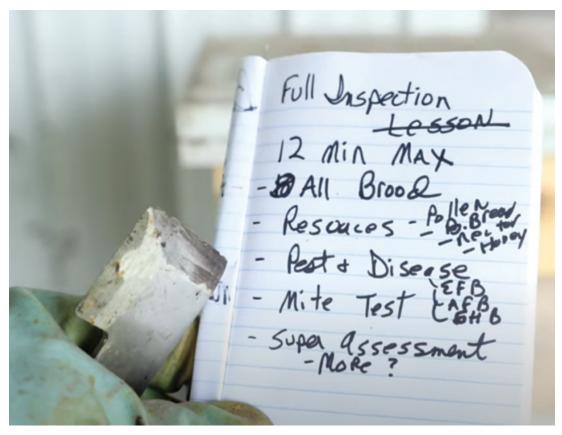
LIBERTY"

AMERICA'S FLATWARE COMPANY

100% MADE IN THE U.S.A.

VISIT
LIBERTYTABLETOP.COM
& FOLLOW US ON
FACEBOOOK & INSTAGRAM
@LIBERTYTABLETOP





How long should it take to inspect a colony of bees? This is one of the most asked questions I receive on my YouTube channel. When I inquire a bit more, most new beekeepers are inspecting their bees for an hour or longer. How often should we inspect our bees? How long should an inspection take? At what point is an inspection too long? What are some ways to make the inspection go much faster?

Inspecting our bees can either be an exciting affair or a dreaded chore. It's not so much the weather, the disposition of the bees or lifting heavy boxes that makes this determination. Rather, it's our own mental outlook. Our inspection can either be driven by our love for bees or overshadowed by our fear and lack of confidence. Whether we love inspecting our bees or dread it, both can have a negative effect on our bees if we keep our hive open too long.

## How Often Should We Inspect Our Bees?

By far new beekeepers inspect their bees much more often than an experienced beekeeper. This is mainly because a new beekeeper enjoys it so much and they are amazed to watch their bees working inside the hive. It's the honeymoon of beekeeping. Experienced beekeepers have learned to make every inspection count and only accomplish what is necessary.

To some degree we are disturbing our bees when we inspect. How much we are disturbing them depends largely on our skills and techniques. If we are rough and clumsy, they will be very disturbed. If we are gentle and smooth they will be much less agitated. I have found that inspecting my bees every two weeks provides me with all the observations I need. For example, when I inspect my bees on the first day of the month, I'm mainly looking for eggs. How prolific is my queen. This is my quick inspection, just to observe the amount of eggs, larvae and brood. My second inspection will be around two weeks later, and this inspection is a bit more involved. I'm looking for brood again, but I'm also doing a quick check for pest and diseases and the overall appearance of resources such as honey, nectar, pollen and bee bread. I call this my 2-3-4 inspection. I'm looking for two different pests: small hive beetle and mites. Next, I'm looking for three stages of brood and finally four types of resources.

## How Long Should An Inspection take?

My first inspection involves only checking for eggs. It is not necessary to find the queen because eggs standing straight up in cells indicates that she laid those eggs within the last 24 hours. As soon as I observe eggs and capped brood, I close the hive. I can always complete this inspection in less than twelve

minutes. Even with honey supers on, I simply remove the entire honey supers off without observing individual honey frames. If frames are not drawn out too close to each other, I may pull out a frame in the center to quickly dive into the brood area.

During my second inspection, about two weeks later, it's my more thorough inspection, my 2-3-4 inspection. I also observe everything I can and so I allow myself an additional three minutes maximum. Fifteen minutes is plenty of time to perform a thorough inspection.

## At What Point is an Inspection Too Long?

An inspection is too long when the colony becomes agitated from being opened too long. This depends on the temperament of the colony, but usually all bees become fed up with a long inspection. It's also too long when you become agitated because maybe you can't find your queen or

When is an Too









you're trying hard to find any signs of eggs and so you might become irritated that you cannot find what you need to see. At that moment, stop and close the hive. If that inspection was not revealing, come back in ten days and reinspect. Remember, all inspections can be accomplished in less than fifteen minutes.

## Ways to Make Your Inspection Faster & More Efficient

A lack of confidence and knowledge of bee biology will always prolong an inspection. If we do not know what we are looking for we will never find it no matter how long we inspect. Here's a few pointers to speed up your inspection:

- Know exactly why you are inspecting and what you will be observing.
- Only look for one or two items of interest, not everything.
- Be wise and look at the correct frames to find what you need.

(For example, the queen is on a frame

of eggs and larvae...not honey)

- Avoid being distracted by a funny movement of a bee, or a new bee emerging.
- Wear enough protective gear so you will not be timid in handling your bees.
- State your intentions for the inspection beforehand and stay on task.

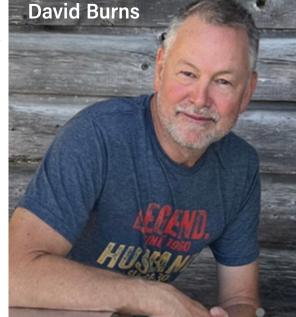
If you find it difficult to speed up your inspections the best approach is to gradually attempt to reduce your inspection time. If your inspections take an hour, make a point for the next inspection to only take 45 minutes, then try 30 and keep reducing your time until you reach the 15-minute mark.

A long inspection is not the worst thing in the world and our bees are very forgiving, but both you and your bees will enjoy and benefit greatly from a concise and efficient inspection. If you'd like to watch a video where I actually timed an

inspection and show how to make fast inspections, visit my website at: www.honeybeesonline.com/davids-youtube-channel/

David Burns is an EAS Certified Master Beekeeper since 2010 and has been beekeeping for nearly 30 years. A life long educator, David's passion in beekeeping is education. He has a popular YouTube channel and podcast, has authored a beekeeping book and speaks all year at beekeeping conferences, conventions and bee clubs.







The author on her first day in the Laidlaw Bee Biology Facility at UC Davis.

For many people, California is a land of dreams and opportunity. A chance to make it big in Hollywood, design the next Tesla<sup>TM</sup>, become a surfing champion, find new work opportunities for your family, or just start fresh. For many of us in the honey bee world, California is also a land of dreams. Dreams of pollination and queen breeding excellence, of star thistle flows and Randy Oliver research. Beekeepers and bee researchers are just like other California dreamers, we just happen to chase our dreams to the scorching central valley instead of the big cities of the golden coast.

I found my "California dream" when I was 18 years old and learned for the first time about almond pollination. A die-hard New England girl, my life plans were to pursue a teaching degree and move back to my hometown to teach and coach at the local high school. That was until I opened my first beehive

and got hooked, and I've been chasing the bees ever since. Working bees in California became my ultimate goal; and I shaped the next few years of my life to prepare for this adventure.

For me, as I am sure is the same for many of you, California meant Almonds and Bees. Bees and Almonds. These are the two words my friends and family have heard the most from me over the past six years as I've pursued my singular mission: to get to Almond pollination. After three rejected job applications, countless hours of pestering my advisor to tell me everything he knew about almonds, and one attempt to hitchhike with a semi-driver hauling bees, I finally got the opportunity to come out to California and work for Dr. Elina Niño and my former Bee Informed Partnership teammates, Matt Hoepfinger and Rob Snyder. Since I've been here, I've learned that California beekeeping is so much more than just almond pollination. It has a history and honeybee tradition that continues to shape the industry in a unique way.

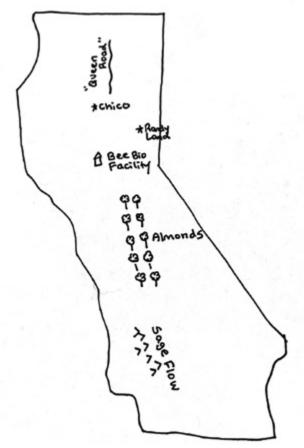
In this article, I want to share some of the things I've learned about beekeeping in California over the past seven months of working here, to give you all a taste of the unique beekeeping world encompassed in this state. To do so, I'm going to take you all to the locations that define my California beekeeping experience (see "Map of California According to Catherine") as a field research specialist. Like California itself, the beekeepers are diverse, and today I've chosen to show you some of what beekeeping in the state looks like through my perspective as a recent transplant and relative outsider. If you are looking for more thorough and encompassing information on beekeeping in California, I highly recommend you ask the real experts, aka, the California beekeepers themselves.

So, hop in the truck with me because we're going on a road trip from the mountains of NorCal to the southern coast to visit some E.L. Niño lab collaborators and learn about our Lab's projects all over the state.

# The Great E. L. Niño Lab Field Research Road Trip

The UC Davis Series

**Catherine Crosier** 



Map of California According to Catherine.

#### Stop 1: Queen Breeder Corridor

Our first stop takes us North to an area known for its queen producers. Queen rearing in California has a long tradition and many commercial operations are multi-generational, having been passed down from parents to children for decades. The history of queen production lies particularly deep within the blood of communities from Dixon up to the Redding area. In fact, a significant portion of California queen producers are related and head-quartered on a single (albeit long) road. On this road are half a dozen queen operations – it is practically paved in decades of accumulated queen rearing knowledge and expertise. These operations are razor sharp in efficiency, organization and dedication to producing the highest-quality queen stock. As part of this dedication to excellence, many of these queen producers provide consistent support to research and our lab in the form of bee and queen donations, research collaboration and general industry insight.

Spearheaded by Marla Spivak, Dennis Van Englesdorp, CA field-specialist Rob Snyder, and the former Bee Informed Partnership, many of these

beekeepers have been participating in hygienic testing on their queens for twelve years. The longitudinal data trends show a significant improvement in the scores from year one of testing to now. This indicates that the decisions made by these queen producers, and informed by the testing results, have in fact been improving the hygienic traits of the breeder queens. Led by Rob and Matt under the wing of Dr. Niño, the Bee Health Hub at UC Davis is continuing this hygienic testing work, as well as working

Field specialist Rob Snyder performing hygienic tests for a CA queen producer.



to include other methods of breeder analysis keeping up with the most recent research.

#### Stop 2: Chico

Our next stop is Chico, a town two hours south of "queen producer road" and Rob Snyder's homebase. Living in Chico allows Rob to be closer to the center of the NorCal bee action and to closely collaborate with beekeepers on experiments. Currently, he is coordinating a study on the effects of pollen supplements on cell-builder health and productivity. The basic question is whether feeding cell-builders (the colony in a queen-rearing operation that is responsible for receiving a grafted frame and raising these larvae into queens) different brands of pollen patties will impact the amount of royal jelly produced, and subsequently fed, to the developing queens. To evaluate this, colonies were fed pollen supplement formulations and queen cells and nurse bees were collected every week for a month during peak queen-rearing season. Cells were then weighed to measure the amount of royal jelly, and hypopharyngeal gland analysis was performed on the worker samples. Stay tuned for the results and huge thanks to California State Beekeeper's Association for sponsoring this project.

While in Chico, we will take the opportunity to stop by Rob's house to process some Nosema (Varimorpha) samples and ask him some questions. Rob is basically an encyclopedia of knowledge of everything related to honey bees, beekeepers and the industry, but if you meet him he will probably describe himself as "just a bee guy." He's dedicated his life to working with California beekeepers and has been supporting them for 14 years, first with the USDA, then the Bee Informed Partnership and now at UC Davis. Need advice on timing of mating flights or mite treatments? Rob will have some good insights. Wondering what's up with the off-looking larvae on your brood frame? Rob will know. Wondering what EFB taste like? Rob's your guy. Highlights from this year of Rob's work include identifying amoeba in honey bee gut samples, coordinating the cell-builder nutrition study and helping teach the instrumental insemination class for the California Master Beekeeper Program.

Rob Snyder evaluates samples for Nosema (now Varimorpha) at his home lab in Chico, CA.

Student Jenny Baudizzon processes molecular samples in the UC Davis Bee Biology facility.



## Stop 3: UC Davis Bee Biology Facility

Two hours south of Chico is the headquarters of the E.L. Niño, Johnson and Williams Labs at UC Davis. As mentioned in previous articles, this lab space has a rich history of both managed and wild bee research. Here is where Sue Cobey worked with bee breeders and offered many instrumental insemination workshops, where native bee expert Robbin Thorp was based and now is the base for new researchers investigating the roles of pollinators in California and beyond. Currently, the lab is home to a variety of studies including a few miticide trials, queen nutrition study, bumble bee and blue orchard bee experiments. This is also the headquarters of the California Master Beekeeper Program (CAMBP) classes. Since the past few articles have focused on this facility, we are just going to make a quick stop to enjoy the gardens and chat with the awesome staff.

## Stop 4: Pollination in the Central Valley Part 1 - Almond

"It all started with sunflowers," said second-generation California beekeeper and UC Davis Bee Biology Facility manager Joseph Tauzer in response to my question "Why is Almond pollination in California the way it is?" I had only been in California 12 hours before launching this question at my new lab-mates, and lucky for me, Joe knows his stuff. I learned that the current state of the commercial beekeeping industry is a direct result of California agricultural crop production. Back in early 2000s a new trend emerged in California of vastly increased acreage dedicated to sunflower production, and in response, the beekeepers pollinating sunflowers had to up the number of colonies they put in the fields. More sunflowers led to more demand for pollination led to more colonies needed and the demand exceeded the capacity of beekeepers in the state. As a result, migratory pollination was born and beekeepers from other parts of the US began to truck in their bees to California each year. This new model of scaling up both crop acreage and bees worked, and soon was repeated in other crops, like Almonds.

This model of large cropping systems forever changed commercial beekeeping, as operations that had been functioning for years were able to multiply in size to respond to the rise in pollination demand. Subsequently, the



Drone footage of an almond orchard in the central valley. ©Matthew Hoepfinger 2024.

need of other beekeepers for bulk bees, queens, nucs. etc. also increased to meet this pollination boom.

But it's not just the draw of pollination payments that brings out-of-state beekeepers back to California each year in such high numbers, it is also the crop itself. Almond pollen is highly abundant and provides a rich resource for bees to build up their numbers. As a result, colonies tend to come out of almond orchards booming and beekeepers can head into the queen production, splitting or honey production seasons with a sprinting head start.

# Blueberry-milk? A blueberry grower uses recycled milk cartons to provide structural support to the bushes.



Almond flowers loaded with pollen.

## Stop 5: Pollination in the Central Valley Part 2 -**Non-Almond Crops**

Beekeepers in California also pollinate a variety of other crops. California leads the nation in gross income from agriculture, making more money from agriculture per year than any other US state (https:// www.ers.usda.gov). This is largely due to the significant production in the state of specialty crops, currently defined in the Farm Bill as "fruits and tree nuts, vegetables, culinary herbs and spices, medicinal plants, as well as nursery, floriculture, and horticulture" (https://www.ams.usda.gov/). Many of these crops require commercial pollination, and the California beekeepers step up to meet this need.

In fact, our lab happens to be currently looking at the prevalence and development of European Foulbrood Infections in specialty crops specifically throughout the central valley. We've spent a lot of time in the Fresno area, evaluating colonies in blueberry pollination and collecting samples to answer three questions: 1) what factors (crop, weather, time of year, temperature etc...) might be associated with EFB infection in commercially pollinating colonies 2) how does European foulbrood infection progress as bees move through different crops and locations throughout the year 3) which strains of EFB are present in California.





Commercial bee colonies make a stop in blueberry before heading south for the Sage honey flow.

Fun Fact: While many crops in the central valley bring in bees for pollination, some mandarins and clementines are covered in nets to keep bees out. This is done to prevent pollination which causes seed production, so consumers can enjoy the fruit without worrying about seeds.



## Stop 6: Sage Honey

We now arrive at the southernmost point of our field research route, into the mountains outside of Santa Barbara. Here, our lab works with beekeepers to evaluate the effect of the abundant honey flow on colonies' ability to recover from European Foulbrood. Some California beekeepers will bring their bees to these mountains for a few months to take advantage of the late Spring Sage bloom and subsequent blooms such as Toyon. The southern coast offers a respite from the hustle and bustle of the central valley, and I was impressed with the amount of honey that can be produced within the state I had always mainly associated with pollination. The main bloom typically begins around May and this year lasted until early August (it was a good year). Other regions of California also offer prime honey locations, and our lab's own beeyards had a great

October 2024

year for Star thistle – a pricky yellow invasive plant species that produces great tasting honey and tends to do well even in the hot Summer months. Maybe it's a no-brainer to most people that California is a good honey-producing state, but I was impressed by the quantity the state's honey producers make.

That concludes our "Great E.L. Niño Lab Field Research Road Trip According to Catherine". I hope this article has given you a glimpse into the diversity and opportunity of California beekeeping, and the projects our lab conducts. Unlike a college town when the students go away for the Summer, California beekeeping has a lot going on all year-round even after the out-of-state beekeepers haul their colonies away post-almond bloom. While this article mainly focused on commercial beekeeping, as these are the collaborators on many of our current projects, the state is made up beekeepers of all scales, backgrounds, goals and approaches to beekeeping and our lab is dedicated to working with all different kinds of beekeepers (and other pollinators too!). Every project mentioned in this article could not have been done without the collaboration and input of beekeepers. A huge thank you to all the California beekeepers who have supported the E.L. Niño Lab in our quest to leverage science to inform beekeeping in the state.

Catherine Crosier is a current technician and field specialist in the E.L. Niño bee lab at UC Davis. She can be reached at catherinecrosier?@gmail.com or ccrosier@ucdavis.edu. For another on-the-road honey bee related adventure check out her blog at https://beeinformed.org/2023/10/03/lessons-from-riding-shotgun-in-the-bee-truck/.



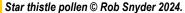


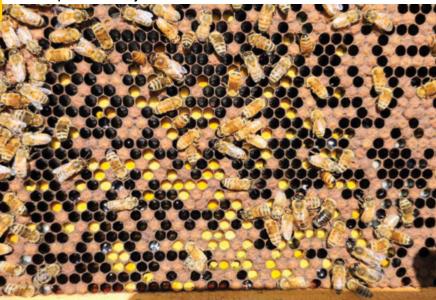


The mountains of Ojai, CA where some beekeepers take their bees to make honey.



Honey bee on star thistle ©Matt Hoepfinger 2024.





# BUILD A BETTER BEE PRESENTATION PART 3

## **Ed Simon**

0 In 11



We finished creating our presentation titled "Swarms are Free". The slides and the note pages are complete, and you are standing in front of an audience of 62 beekeepers. There is absolutely no need to

## **BUT YOU DO!**

feel uncomfortable.

This section will provide you with some hints to help you relieve some of that stress and allow you to be given a standing ovation when the presentation is complete.

## Speech 101 – Remember that Class You Hated!

Now you wish you had paid more attention.

Let's review some of the basics about giving presentations.

## **During the Presentation:**

- · Face the audience not the screen.
- Do not block the screen.
- Roam? Stay in front of the front row. Move side to side.
- Use a laser pointer not your hand.
- Do not wave the pointer. The audience's eyes cannot follow it that fast.
- Stay on point Don't go on a tangent.
- · Speak loud and clear.
- If you need time to think, then use drinking some water to give you time.
- A pause is OK and can be used to emphasize a point!
- Do not use fillers silence is OK.
- Common speech fillers:

- "AAAH"
  - Two seconds of silence is
- "Everyone knows" or "You know."
  - No, they don't know.
- "I mean"
  - Just clarify you don't need to tell them you are clarifying an idea.
- **Do not** and I repeat **NOT** read the presentation.

## At a Question & Answer Session:

- Take the microphone to the questioner.
- Repeat the question so the audience can hear it.
- Clarify the question to make sure you understand it.
- It is OK to say you don't know. Ask for HELP?
- A beekeeper audience will usually have five different solutions for each problem presented.

### Let's Do It!

**Step 1:** Before the meeting.

You just arrived with your presentation on a thumb drive, a stack of handouts, and a couple of show and tell items.

- Introduce yourself and give the handouts to the host.
- Give a printed biography to the host
- Check the light switches.
- It should be dark on the screen and a light at the back of the room.
- Install the presentation and make sure it works.
- If possible, run it from the thumb drive.

• Double check the presentation's PowerPoint setup.

O ≜® ○ Erom: 1

Advance slides

O Manually

Multiple monitors

Automatic

Slide show monitor

Use Current Resolution
Use Presenter Yiew

OK

Using timings, if present

· Full Screen.

Set Up Show

Show type

Presented by a speaker (full screen)

☐ Loop continuously until 'Esc'

Show without garration

Show without animation

Disable hardware graphics a

Laser pointer colon 🛕 🕶

4

Browsed by an individual (window)
 Browsed at a block (full screen)

- · Show all slides.
- Use presenter view.
- The audience does not need to see your notes.
- Place the Show and Tell items on a table for easy access.
- Ask the host to control advancement of the slides of the presentation.
- You will be busy talking.
- If the host needs a prompt, all you need to say is "Next Slide Please".
- With the host's permission, add a kick start to the meeting.
- Start the Windows "Slide Show" feature to cycle through your folder containing a selection of 63 bee swarm slides.
- This will provide something for the early arriving attendees to talk about and prime them for your presentation.

How to: Start a Slide Show Using Windows 11.

- 1) Use the Windows file explorer to select a picture in the folder you want to use for the collection of pictures.
- 2) Right click on the picture and select "Start Slide Show" or press F5.
- Start your presentation as a different task so all you need to do is cancel the current task (Looping swarm pictures) and activate your presentation.





**Step 2:** When the host introduces you.

- If you have not done these things earlier, ask the host to set the lights for a good screen display.
- Move the lectern out of the way. It may block the view.
- Move the PC to a place where the host can access it to control the slide advancement and not obstruct the screen.
- Transfer to or start your presentation.

#### Step 3: JUST DO IT!

- Give the very best presentation of your life.
- By this time, you should have the presentation memorized. All you need to see is the slide itself to jog your memory.
- If not, then you need to be able to view PowerPoint's note pages.

### **Helpful Hints:**

- 1)Roam Roaming is a technique that is very effective for informal presentations.
- a. You will not be blocking the same person's view of the screen all the time.
- b. The audience will be actively following you.
- c. Stay in front of the first audience row.
- d.Be careful stepping backwards!
- 2)Use a laser pointer to illustrate something on a graphic or picture.
- 3) Vary your voice in both pitch and volume.
  - a. Monotone is a presentation killer!
- 4) When a slide mentions a Show and Tell device, Show it!
- a. Invite later inspection.

  5) Have a question or two for the

audience available. If your request for questions in the Q&A section results in silence, turn the attention back to the audience by questioning them.

## Step 4: Conclude Positively!

- Leave the audience with a feeling that they can perform whatever function you are promoting.
- Invite them to come up and look at the Show and Tell items. Most beekeepers will not need this invitation.
- Thank them for inviting you to present your ideas.
- That's all folks. You now have the basics for creating a SMASH-ING presentation when your bee club's presentation coordinator panics and pleads for help.

Presenting is not hard; it just takes practice. You can do it.

Remember, they wouldn't have asked you if they thought someone else could do it better! BG













# HONEY BEE HEALTH COALITION

## **Check out our FREE Beekeeping Resources:**

## VARROA MANAGEMENT GUIDE

A practical guide and step-by-step demonstration videos featuring safe, effective methods to detect, monitor, and control Varroa mite infestations.

HONEYBEEHEALTHCOALITION.ORG/ VARROA

## 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.

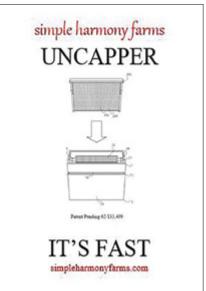
HONEYBEEHEALTHCOALITION.ORG/ HIVEHEALTHBMPS

## VARROA MANAGEMENT TOOL

An interactive decision tree that provides beekeepers with Varroa management and treatment options based on their specific circumstances and hive conditions.

HONEYBEEHEALTHCOALITION.ORG/ VARROATOOL

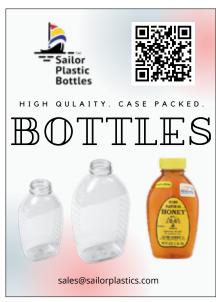












# Harmony Between Honey Bees and Soybeans

Focus of MSU Entomologists

### **Meg Henderson**

In the Mississippi Delta, over two million acres of soybean fields stretch endlessly toward the horizon. Early in the growing season, the hum of honey bees can be heard in many of these fields.

At Mississippi State's Delta Research and Extension Center, scientists in the Mississippi Agricultural and Forestry Experiment Station are examining the potential benefits and drawbacks of seasonally hosting honey bee colonies in the Delta's soybean fields.

Esmaeil Amiri, MSU assistant extension/research professor who specializes in pollinators, and Jeff Gore, professor and head of the center, have found benefits for beekeepers among the Delta's soybeans, divided into maturity groups defined by the amount of sunlight and temperature received.

"For the last 20 years, we've been growing mostly maturity group four and five soybeans, which are indeterminate varieties," said Gore, a biochemistry, molecular biology, entomology and plant pathology professor. "They flower for up to eight weeks, unlike the historical determinate varieties, which would flower for only a few days."

Savvy beekeepers have been homing in on the Delta, using its soybean fields as a resource to extend honey production season through the dearth of Summer, when flowering plants are less plentiful in the mid-South.

"By June, most wildflowers are out of bloom, and beekeepers are out of options," said Amiri, who is also a specialist with the MSU Extension Service. "Beekeepers—mostly local but a few from other states—are taking advantage of our longer flowering season, which ultimately results in the harvesting of more honey."

Soybean growers and beekeepers have been working cooperatively since the Mississippi Farm Bureau spearheaded the Honey Bee Stewardship Program about 15 years ago to address concerns about the use of pesticides in agricultural fields.

"Mississippi was one of the first states to develop a pollinator protection plan," said Gore. "Farm Bureau brought stakeholders together to discuss concerns and come up with a set of best management practices for beekeepers and farmers who choose to share their fields with colonies."

Gore added that one of the beekeepers' biggest concerns was the use of pesticides, mainly neonicotinoid seed treatments and their effects on bee health.

"Through our research, we've been able to identify chemical-related risks—for example, pesticides dusting off the seed during planting and drifting to nearby wild-flowers—and educate farmers to understand those risks and mitigate them with proper management," he said.

Amiri added that bees are subject to a multitude of stressors, including pesticides, pests, pathogens, climate

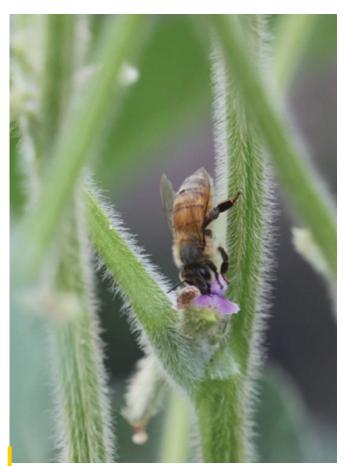


Photo by Adam Varenhorst, South Dakota State University

change, habitat loss and nutrition deficit. He emphasized that a strong, healthy colony can handle the stress of exposure to a pesticide much better than a colony already weakened by one or more additional stressors. Amiri's recent research examines one of today's most lethal stressors—the *varroa* mite, which transmits numerous viruses to the honey bee colony.

"The key is educating farmers and beekeepers and sharing our research with them," said Amiri. "Many of them are up to date on the latest scientific articles, and they attend meetings and workshops to learn as much as they can to keep their bees as healthy as possible."

Although it requires a little extra knowledge and work on their behalf, soybean farmers are reaping the benefits of the bees' presence in their fields. Soybeans are self-pollinating, so pollinators are not required; however, many farmers welcome beekeepers and their bees because they feel their presence increases environmental sustainability on the farm. These added benefits provided by pollinators are increasing their demand for colonies.

"Our MSU research and extension faculty are doing a great job in connecting farmers and beekeepers, growing the partnership with these two very different agricultural operations," said Gore. "We are dedicated to translating knowledge into impact on behalf of all agriculture in Mississippi."

To learn more about the Delta Research and Extension Center, visit **www.drec.msstate.edu**; for more about the Mississippi Agricultural and Forestry Experiment Station, visit **www.mafes.msstate.edu**.

Mississippi State University is taking care of what matters. Learn more at www.msstate.edu. <sup>™</sup>

# OH ME, OH MY HIGBEE GLASS



I was recently cleaning out a small closet and noticed that I had a number of pieces of Higbee glassware. Then the thought came to my mind that somewhere around here there are many, many more pieces. Some of them are real Higbee, and some are "fake" or made by another company.

# Of course, some of you are wondering. What is Higbee glassware?

Charles K. Bryce, John B. Higbee and Joseph A. Doyle founded Bryce Higbee Glass Company in 1879. The factory was located in Homestead on the southwest side of Pittsburgh, Pennsylvania. Because of the location, the company was also known as the "Homestead Glass Works." John B. Higbee was the general sales manager.

Bryce Higbee Glass Company produced primarily pressed clear glass tableware. In 1907, the Homestead plant was destroyed by fire. The Bryce Higbee Glass Company ceased operation.

John B. Higbee organized the John B. Higbee Glass Company with the two Bryce brothers, Charles and James, and built a new glass factory at Bridgeville, Pennsylvania. John B. Higbee died. The J.B. Higbee Glass Company had prospered until 1907 when a combination of poor financial decisions blamed on Charles Bryce's embezzlement and a disastrous flood drove the plant into receivership.

Orlando "Ollie" Joseph William Higbee, John B. Higbee's son, was able to acquire the equipment and molds that had survived the flood and incorporated a new company. He named the company for his deceased father, J. B. Higbee Glass Company and located it in Kirwan Heights, Pennsylvania.

The new J.B. Higbee Glass Plant produced glass tableware from 1907 to 1918. Orlando "Ollie" Higbee was born September 20, 1874 and died August 22, 1919. In 1919, General Electric purchased the company and mainly produced light bulbs.

### The making of pressed glass

The normal process in making pressed glass is to add a heated mixture of sand (silica), soda, magnesia and alumina which is heated to 3100 degrees Fahrenheit and poured into a mold. After the exact amount of mixture is added to the mold, air is inserted into the mold forcing the mixture against the surfaces of the mold.



### Trade mark and similarities

The Higbee glassware has a bee imprinted in the center of each piece that was produced in Bridgeville. The letter "H" is embossed on one wing of the bee. The letter "I" is embossed in the body of the bee. The letter "G" is embossed in the other wing. The color of the bee and background shown come from the color of the table.

When General Electric purchased the Higbee Glass Plant, the

### Jim Thompson

Higbee molds ended up with the New Martinsville Glass Company in West Virginia. They could produce the trademarks but without the letters. However another source of information states that a stylized honey bee with pointed wings was used by the L. G. Wright Company from 1960 -1970. Then in the 1990s, the L. G. Wright Company used a bee more like the Higbee bee without the letters. Yet other glass companies such as Paden City Glass Works in West Virginia and Mosser Glass, Inc. in Cambridge, Ohio are reportedly producing similar glassware.

### **Patterns**

At least eleven different patterns of pressed glass were produced: Alfa, Colonial (clear panel), Delta, Feathered Medallion, Medora, Fortuna, Gala, Laurel, Pineapple (Iris), Rexford and Star Thistle.



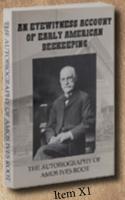
### Types of glass pieces

There were a variety of glass pieces: baskets, bowls, cake stands, candy dishes, compotes, comb dish, creamers, drinking glasses, napkin holders, pitchers, salt cellar, sugar bowl, tooth pick holders, thermos bottle, vases and many more.

Higbee glassware was marketed in the Higbee stores in Pittsburgh and New York and by catalog. It is interesting to note that the Higbee stores were named after Edwin Converse Higbee, who was not related to John B. Higbee.

Another interesting fact was that John B. Higbee's mother's maiden name was Higbee. Thus she was Abigal *Higbee* Higbee.





One day in August 1865 a stray swarm of bees passing through the air attracted his attention. That evening, after hiving the swarm, other books and papers had to be laid aside in favor of anything pertaining to bees and bee culture. From that time on he was a student and breeder of the honey bee. It has been said that he did more than any other man in America to commercialize beekeeping. Take a step back in time and follow his journey and see how his quest for knowledge and profound religious conviction helped shape American beekeeping.

### **Bee Culture** BOOKSTORE

Order yours today at www.store.beeculture.com/books/



gid Island Queen, Olivarez Honey Bees/Big Island Queens is seeking motivated beekeepers to join our Hawaii team! Experience preferred. Self-motivator and ability to work in

a team environment a plus. Positions are full time, salary based on experience. Great Benefits Package. Prior work history and references required. Advancement opportunities available. Submit resume to info@ohbees.com or Olivarez Honey Bees Inc/Big Island Queens, P O Box 847 Orland Ca 95963, Fax: 530-865-5570, Phone 530-865-0298

### **Hardeman Apiaries**

### **Italian Queens**

1-9 10-24 25+ \$22.25 \$23.75 \$22.00

### Russian Hybrid

1-9 10-24 25+\$26.25 \$24.50 \$24.25

P.O. Box 214, Mount Vernon, GA 30445

912.583.2710





Do you know about our daily email newsletter? It's all about current news in the beekeeping industry. Each article is new and different every day.

Interested? Subscribe at this link or scan the QR code! www.BeeCulture.com/Catch-Buzz/ Subscribe-Newsletter

### **Mountain Grey Caucasian**

Republic of Georgia

### Queens

\$60.00 \$55.00 \$50.00 25-up

Clip and/or Mark Included Prices do not include shipping, handling, or insurance Shipping season starts first week of May

### Winters Apiaries



3225 Long Creek Rd. Parrottsville, TN 37843 (423) 465-8197



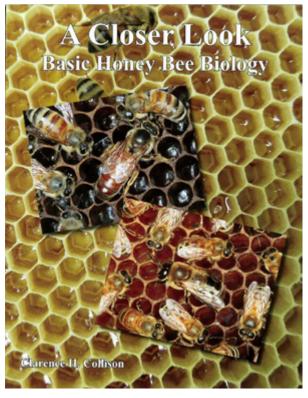
http://www.caucasianbreeder.com

# BEES & QUEENS

510 Patterson Rd Baxley, GA 31513 912-367-9352

2024 ITALIAN HYBRID PACKAGES & QUEENS

State Inspected Annually. Call for Pricing & Availability. Colossians 3:23



## Bee Culture

The Magazine of American Beekeeping Written by Clarence Collison, Professor Emeritus and former Head of the Department of Entomology and Plant Pathology at Mississippi State University and the former beekeeping/pollination specialist and livestock entomologist at The Pennsylvania State University.

Professor Clarence Collison has performed the meticulous scholarship so desperately needed by beekeepers and scientists alike. He has reviewed the vast body of research: the biology, physiology, biochemistry and behavior of *Apis mellifera* and presented it in an concise and objective manner. This book will be required reading of all serious bee scientists, and on the desk of every beekeeper for fact-checking and scientific clarification. (Lawrence John Connor)

www.store.beeculture.com/books/







# **Hive Orientation**

When it Comes to Almond Pollination, Strong Colonies Don't Seem to Care!

### Mike Katznelson

BeeHeroX is the innovation arm of BeeHero, we do all the crazy stuff like Asian hornet detection, developing infield sensors to track the pollination of vegetables, fruits, nuts and even monitor seed production. We monitor bumble bees pollinating tomatoes inside poly tunnels, we mix bees with coffee pollination, we even chase the wild pollinators of vanilla around the Peruvian rain forests. A lot of our efforts are also focused on optimizing how bees are used for almond pollination in the central valley of California. Using electronic monitoring equipment, we can establish and optimize the ideal state of a bee colony to maximize the amount of pollination trips made by that colony. Monitoring bees leaving hives vs bees in the crop gives us valuable insights into alternative forage and post-bloom foraging opportunities. We also optimize hive placement in or around the crop, the total number of hives required and how these hives are distributed across the drops.

Figure 4. Frank Binkariah (laft) and Kata F lbla (rinkt) atandian

Most recently, we have been investigating the effects hive orientation has on pollination trips. General beekeeping advice on hive placement suggests there are benefits from the entrance of the hive having a southernly (in the northern hemisphere) or easternly exposure. While amateur beekeepers tend to have a lot more flexibility with the direction in which they orientate their hives, for reasons of practicality, this is not a freedom most commercial beekeepers enjoy, especially when shipping bees for pollination services.

We therefore started investigating if the strength of the colony could reduce the importance or significance of hive orientation. To cut a long story short (spoiler alert), strong hives don't mind in which direction they point, while weak hives start flying much later in the day if they are pointing in an unfavorable direction. What follows is the long version of that story. We also recently published a far more detailed account in the peer reviewed journal *Insects* entitled **Hive Orientation and Colony Strength Affect Honey Bee Colony Activity during Almond Pollination**.





Figure 2: Delivering the Pol-line bees to join the Russian bees at dawn.

### **Experiment methods**

In order to explore the effects of hive orientation in an almond pollination environment, we conducted an experiment at an almond orchard situated in Tranquility, just east of Fresno, approximately halfway down California's Central Valley. We monitored 24 hives spread across six pallets, with four hives on each pallet (as seen in Figure 1). Inherently, the hives on each pallet faced in opposite directions, half of the hives entrances faced due east while the other half faced due west.

The experiment was run in conjunction with a small team from the USDA, ARS (Agricultural Research Service) Honey Bee Breeding, Genetics and Physiology Research based in Baton Rouge. The team was lead by Dr. Elizabeth (Liz) Walsh and included Drs. Frank Rinkevich, Kate Ihle, and Mike Simone-Finstrom. The USDA team were assessing the foraging behaviour of Pol-line bees, a strain of bee specifically bred by the USDA for pollination. A comparison was made with the foraging behaviour of Russian bees.

It was important that all comparisons between strains were made under the same environmental conditions so in the same orchard, two pallets of the Pol-line bees were placed next to two pallets of Russian bees (see Figure 2). We all concluded the addition of stock bees would make a valuable control, and this is where working for the world's largest pollination supplier (BeeHero) comes in handy. Following a quick phone call late that evening, we arrived on site the following day to find two pallets of stock bees or "Californian muts" sitting next to the pallets of Pol-line and Russians.

Figure 3: Dr. Liz Walsh collecting returning pollen and nectar foragers.



# BeeHero

Throughout the course of the experiment, the USDA team collected some very interesting data including the weight of pollen from returning foragers, as well as the weight and even the sugar content of collected nectar (see Figure 2 on previous page). Most useful of all, from our perspective, were the vigorous and accurate assessment of colony strength using the Liebefeld method. While considerably more time consuming than a standard bee inspector's bee frame grading, this method generates extremely accurate and reproducible figures for colony strength (as well as the quantity of brood and stores).

We fitted various types of proprietary electronic equipment to the hives to help monitor/track the bees' behaviour (as seen in Figure 4). Every five minutes readings were taken from the various sensors, and every 20 minutes this information was conveyed back to the cloud via the cellular network using a communications gateway. This allows us to remotely monitor data coming back from each colony.

Figure 4: A pallet of monitored hives. Each hive is standing on a scale and has a bee counter across the entrance. The scale and counter are powered using a power bank with a solar panel. On top of the four hives is the communication gateway; a weather pack is mounted behind the pallet.





Figure 5: Acoustic sensors used to track in-field pollination visits.

Flight or foraging activity is monitored using bee counters fitted across the hive's entrance. The bee counters has 26 tunnels each with two light beams. The order in which the bee breaks the light beams signifies direction, allowing the bee counter to log both bees leaving and bees returning to the hive.

We used hives scales to monitor the weight of each colony. For honey production, remote weight data is very valuable for suppering and monitoring when the nectar flow begins and ends; this information is particularly useful if the bees are situated in areas that are difficult to reach. In the pollination environment, weight, when used in conjunction with data from the bee counter, helps differentiate between pollen and nectar foraging and also offers a good indication of nectar load per bee.

Small sensors placed inside the hives monitor the hives' homeostasis (temperature and humidity) and also collect in-hive acoustic information. Similar small acoustic sensors monitoring bee activity were placed in the almond trees, helping track pollination visitation within the crop (as seen in Figure 5).

A weather pack collects wind speed and direction as well as ambient air temperature and rainfall. This meteorological information is extremely valuable as it gives context to all other monitored parameters.

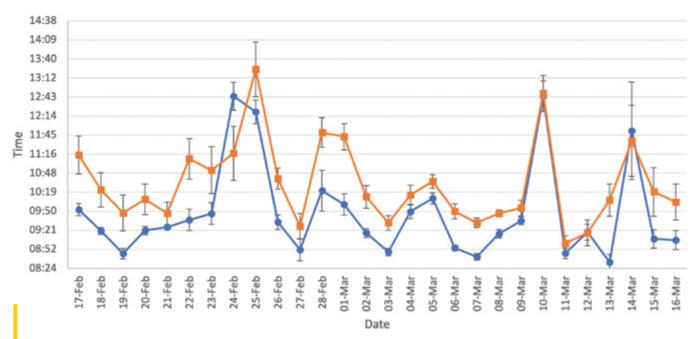


Figure 6: The average start time of foraging in east and west facing colonies.

It is easy to assume that electronic hive monitoring in research projects and experiments like this is a simple case of fitting equipment to beehives, then sitting back and waiting for an unbroken data set to materialize in the cloud. While our hive monitoring equipment is more advanced than most, leaves fall on solar panels, mice eat cables and power banks go faulty. Spray trucks nudge hives, splitting the boxes providing alternative routes for foragers which are not monitored by the bee counter fitted across the hives entrance. Indeed, caring for monitored hives in this environment is more like babysitting a small child; while they do not need constant attention, they do need constant surveillance and immediate intervention when things go wrongs.

### Results

So, what did we learn about hive orientation in the almond orchards of California? Or, maybe more importantly, how can we optimize the state of bee colonies so they are less sensitive to their hives' orientation? In a previous study, using hive scales to detect when the foraging bees leave the hive in the morning, William Meikle from the USDA Carl Hayden bee research laboratory found that hives with their entrance facing east started foraging sooner than hives with the entrance facing west. The fact that the rising sun shining into the entrance of a bee colony inspires foraging sooner than the foraging from a west facing colony with its hive entrance still in the shade is fairly intuitive. William found the time difference in flight occurrence to be around fifty minutes, i.e., on average, hives facing east started flying approximately fifty minutes sooner that hives facing west.

We confirmed this in our experiment. Figure 6 shows the start times of east facing colonies (Blue line) vs the start time of the colonies facing west (Orange line) from mid-February until mid-March 2023. We can clearly see that the colonies facing east tend to start flying sooner than the west facing colonies. There are some obvious exceptions, such as on the 10th and 14th of March where bad weather delayed all colonies activity until much later in the day, when any advantages of facing the early morning sun were lost. On average, across the whole season, we calculated bees facing east started flying an average of 45 minutes before those facing west, which is in very close agreement with William's original findings.

In Figure 7 (see next page) we can see that unlike the difference in start time, the time at which the bees stop flying was very similar, regardless of hive orientation. Over the course of the experiment, bees from colonies facing east stopped flying just 4 minutes sooner, on average, than colonies facing west. This makes sense, as while the early morning sun shining through the hive entrance encourages the bees to start flying sooner, following a warm day the fact the sun has stopped shining on the entrance at the end of the day is far less significant.

We then became curious about how the strength of a colony may affect its sensitivity to orientation. We grouped the colonies by strength and found that when colonies are facing east there was little to no difference in what time they started flying. The foraging start time was not affected by colony strength as seen in Figure 8 (see next page). However, we observed a much bigger difference in foraging behaviour between the strength groups when the colonies faced west. We found that weaker colonies start flying much later than strong colonies. Indeed in Figure 8 (see next page), we can see weak colonies can start flight as much as two hours later than their stronger counterparts facing in the same direction.

From this we can conclude that stronger colonies are far less sensitive to hive orientation, and we observed this across all three strains of bee. This is a relatively important finding when seen from the perspective of a pollination

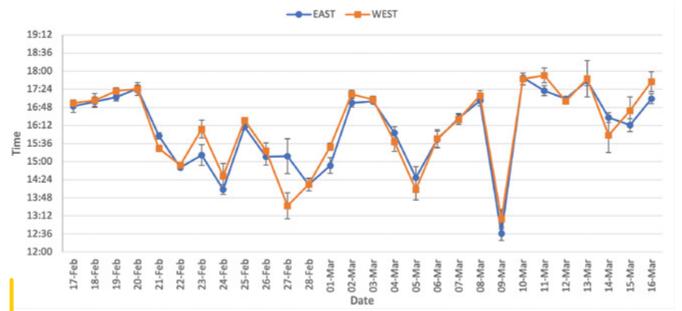


Figure 7: The average end time of foraging in east and west facing colonies.

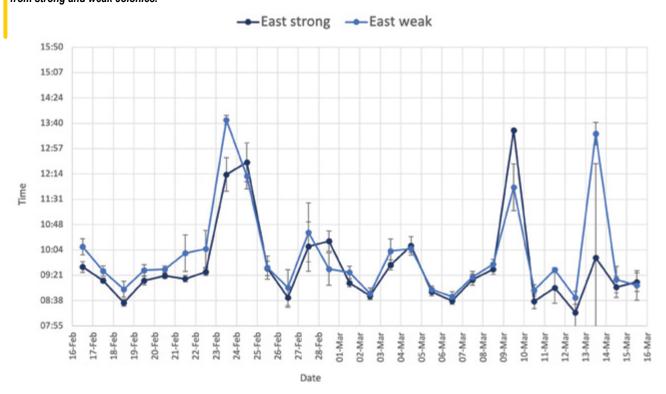
service provider. Commercial beekeepers tend to keep their hives on pallets, where the hives face in opposing directions. It is not practical for the commercial beekeeper to group the hives on a pallet by strength, trying to ensure all weak colonies end up facing east, nor would it be practical to communicate a preferred pallet orientation to the person delivering the bees to site.

This sheds new light on how a grower pays for pollination. Originally, growers would pay for the number of hives – most often two hives per acre. This was primarily driven by crop insurance companies keen to ensure the

crop received adequate pollination. However, this model does not fully account for colony strength. Moving to "bee frames per acre" is a more sophisticated approach, but still neglects the fact that we can no longer compare a frame of bees with a frame of bees. A single bee frame in a weak colony facing west will start foraging later then that same frame of bees in a stronger colony facing west. As we move into the era of precision pollination, maybe it is time to move the conversation to pollination trips per acre.

Furthermore, if a single twelve-frame colony will on average provide more pollination trips than the total trips made by two six-frame colonies, in theory, the same number of pollination trips could be achieved using less

Figure 8: The average start time of foraging in east facing hives from strong and weak colonies.



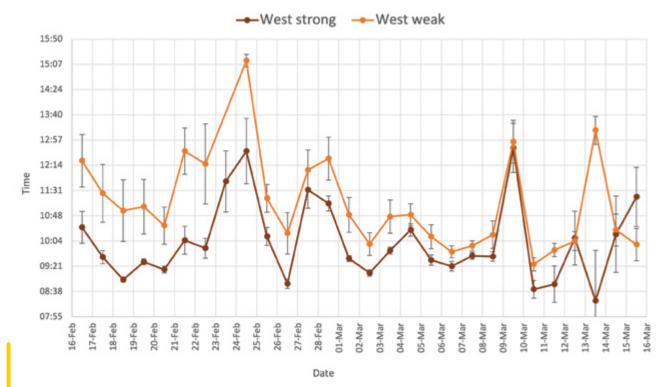


Figure 9: The average start time of foraging in west facing hives from strong and weak colonies.

than half as many bee hives. This has obvious advantages for all stakeholders involved in the pollination industry, especially when you consider over two million hives are transported into the almond orchards of California every year.

The author would like to acknowledge the help and guidance from the USDA Baton Rouge team, William Meikle from the USDA Carl Hayden Bee Research Center for his original research and guidance with the most recent paper, farm manager Rita Del Testa and also the grower Jon Caywood.







# Conversations with a Beekeeper: Mitigating Risks Through Climate Smart Practices

### **Brett LeDuc**

This article was originally published in the May-June 2024 issue of Almond Facts Magazine (Blue Diamond Growers) and has been reprinted with permission and minor edits.

After the almond bloom in Springtime has come and gone and the bees have completed their important work of pollinating California's almond orchards. Despite some wet and windy conditions, warmer temperatures prevailed, and several periods of near-perfect weather had farmers and beekeepers celebrating a fruitful pollination season! The industry is now shifting gears; beekeepers have moved bees into different crops across the country and farmers are tending to their quickly developing orchards. Those who grew cover crops are terminating their stands and preparing orchards for yet another year of supporting pollinators through climate smart practices. I spoke with local beekeeper, Jason Miller, to discuss the various benefits of cover crops from a beekeeper's perspective. Read on to learn more about pollinator-friendly practices and how farmers and beekeepers are working together to protect bee health.

Jason Miller, owner of Miller Honey Farms, is a fourth-generation beekeeper here in California. Every year, Miller's bees get their start pol-

linating almonds, and despite some complications from the rainy Winter, he reports that "from pollination to nut set, it was a good year." There are many variables outside our control that determine how bloom and pollination will go. (Take it from Miller, who had about 200 colonies washed away in a flash flood this year!) Factors such as weather, temperature, frost, hive strength, orchard location and soil type can play a significant role in the season's outcomes. Miller supposes that if you can "retain control of your pollinators, keep them healthy, and keep them in your orchards," the less likely it is for those unknown elements to have adverse impacts in your orchard. By planting cover crops to help

in managing bee health, you can build a better defense against these factors and foster a more resilient system for the bees and your trees.

Using the example of especially cold Winters, Miller says "it's all about the strong colonies." He explained that in Winter, when almonds are in bloom, a beehive doesn't naturally want to be big, but instead, like everything else in Winter, bees slow down and rest. A weaker hive might end up spending most of its resources keeping warm instead of building brood and foraging in response to the almond bloom. By providing additional natural forage for bees during this critical period, a farmer can "retain control" and mitigate the risks of unpredictable conditions.

When bees find a reliable source of nutritious food, it triggers a positive response throughout the entire hive. Incoming pollen from cover crops stimulates the hive to begin its reproduction cycle and start increasing its population. As the number of bees increases inside the colony, more bees are freed up for foraging. This leads to even more pollen col-

Early blooming cover crops can signal the coming of Spring, which encourages bees to break their Winter dormancy and begin the foraging cycle. Bare soils that lack forage and diversity compel bees to stay inside to keep warm, signaling that Winter is not yet over! Image Credit: Project Apis m.



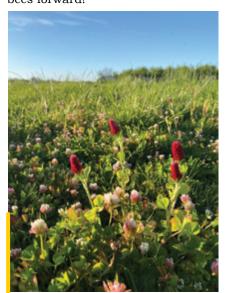
lection which results in vigorous hive strength and increased pollination in the orchard overall. By planting early blooming cover crop varieties in the Fall, farmers can initiate this hive response *before* the almond bloom. Even if cold or wet weather is on the horizon, bees with access to cover crops are more likely to be geared up and ready at the first sign of good weather.

Another "unknown" that Miller has experienced first-hand, is the potential of unintentional pesticide exposure from neighboring farms. As the almond bloom progresses and flowers open each day, pollen released from the anthers is collected and removed by the bees by mid-afternoon. (If you see bees carrying pollen late in the day, after 3:00 or 4:00 pm, you probably don't have enough bees in the orchard.) When the bees have stripped that day's pollen, they will go looking for other sources of food. Having flowers in the orchard from a blooming cover crop will keep the bees in your orchard.

Jason shared a story about an almond orchard that was experiencing significant bee die-offs at the tail end of bloom. They had to remove bees earlier than necessary; rushing to move their bees due to an unknown source of pesticide poisoning.

Without a diversity of forage in the orchard, bees were traveling to nearby farms and getting exposed to pesticides. However, the next year the farmer planted cover crops, which kept the floral resources local and anchored the bees right there in the orchard. Miller says, "Like night and day, they stopped seeing the pesticide kill." In the morning, bees pollinated the almonds, and throughout the day they stayed in the cover crop with no need to scout for additional sources. They were able to keep the bees in longer without worrying about them getting into trouble at nearby farms.

Planting cover crops and bee habitat is a win-win for the farmer and the beekeeper. Cover crops not only support bigger colonies but can also save your beekeeper on inputs and labor. Bees are healthier when eating a diverse, natural diet which can reduce costs for labor and artificial food sources. Miller tells me that feeding bees artificial pollen patties "is like eating macaroni and cheese three meals a day." Bees are not as healthy with such limited provisions; their immune systems are down and they aren't as vigorous or resilient as they could be. Many beekeepers, including Miller, are willing to offer a discount on pollination services for farmers who plant cover crops. He says, "If you're putting your best foot forward for bee health, I'll put by best bees forward!"



PAm.'s Annual Clover Mix, a reliable nitrogen-fixer, can bloom from March - June to extend forage resources for pollinators through the season. Image Credit: Project Apis m. — Seeds for Bees® participant photo submission.

The health of the almond industry and the bee industry are intrinsically tied. Miller suggests that taking care of your bees, whether that's through reduced pesticides, less artificial inputs, or planting cover crops, will benefit you both at bloom time and in subsequent years. If you're managing your orchard with pollinator health in mind, and bees start healthy in your orchard, it's going to pay dividends. "There are more reasons to plant cover crops than may be obvious at first," says Miller. The farmers he is acquainted with who plant cover crops or hedgerows for pollinators have shared that they

tend to see the connections between all these aspects of the farm. Soil health, nematodes, pests, weed pressure, nutrients, and crop productivity are all positively impacted, he says, "all the benefits start to add up."

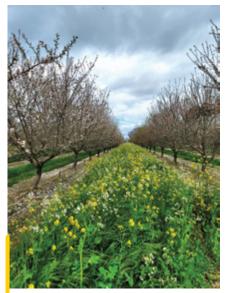


Hives that have access to natural pollen sources early in the year result in bigger colonies and increased pollination potential. Image Credit: Project Apis m.

This year marks the second year of Blue Diamond's USDA Climate Smart Grant. Rolling out over five years, the project promotes the adoption of soil-building and pollinator-friendly practices in California's almond farms. In response to the growing market of eco-conscious consumers, the grant also aims to expand market opportunities and premium prices for sustainably grown almonds. Farmers can receive payments and free materials for the following practices:

- Cover Cropping
- Planting a temporary crop, typically flowering and nitrogen-fixing species in between orchard rows to build provide soil health benefits and forage for pollinators
- Conservation Cover
- Establishing permanent vegetation fallow or marginal land to protect soil from erosion, and enhance habitat for wildlife and pollinators
- · Hedgerows
- Establishing rows of native shrubs and trees to create habitat corridors that support pollinators and other beneficial insects

"Climate smart" practices, like installing permanent pollinator habitat and planting Winter cover crops in orchard rows, provide a broad range of benefits for an orchard. In addition to increased pollination and bee health, these practices help to reduce erosion, suppress weeds, improve water-use efficiency and improve overall soil health.



Planted in a Blue Diamond orchard through the Climate-Smart Grant, this cover crop stand seen here was blooming on February 29, 2024. Image Credit: Project Apis m.

Last year, Project *Apis m.*, in partnership with *Blue Diamond Growers*, planted cover crops in over 17,000 acres through the Climate Smart Commodities Grant (that's an area of land larger than the entire island of Manhattan!). Project *Apis m.*'s Seeds for Bees® program provides seed and technical assistance to support farmers to adopt cover crops in their orchards.

The Seeds for Bees® program promotes the adoption of cover crops on California's working lands to provide essential forage for bees, improve soil health and support a sustainable food system. The seed mixes offered through Seeds for Bees are designed to bloom during critical periods when natural forage is scarce, and pollinators need it most. California beekeepers are encouraged to apply for the program, with awarded participants eligible to receive up to \$2,500 worth of free cover crop seeds.

Visit our website at **Sign Up/Home**— **Project** *Apis m*. to learn more and to support Project *Apis m*.



# The Sweetness of the Ages

### **James Howard**

Many times, a family connects through nature, animals and other means. One such family is found in E. Berrien County. Freddie Hughes is a 77-year-old beekeeper who is a veteran. He developed the love of bees and gathering of honey as a preteen. He and his brother found a swarm of honey bees in an old tree that was broken. The boys caught some bees and took them home. They kept the bees in a bag and even collected a bit of honey from the bees.



The ways of life carried on and Freddie got married, went in the military to serve our great country and we can have freedom to own businesses and do the things we love because of this great sacrifice many have endured. The love of the honey bee remained in the back of Freddie's mind, life continued and being a country man, he decided a few years back to get some bees.

He obtained some and he says the bees came from New York and there was ice on the boxes, yet the bees lived. He began to work with the bees and obtained great joy from it. He's been through the rigors of losing bees by them splitting off, and has endured a few stings. The great joy procured from seeing some of God's creation at work thrilled his soul.

Freddie wasn't seeking to expand to a large operation. He wanted to keep things at hand as other great responsibilities sought to grab his attention. He worked with his cousin, Dorman Benefield, some of whom he says made a larger operation thrive. That didn't bother Freddie as he wasn't out to be a huge producer, but one who gathered the sweetness of the honey bees production.

In life we encounter things that are tough and have an impact on our lives in all areas. This hit Freddie and he couldn't work the bees last year. This physical blow held him back from enduring the heat and sun and made it hard to work. With Freddie being a hard-working man of the country and land, he's going to make on last stand to continue working in that which he loves.

He observed the behavior of the bees and observed the queen will back off a bit producing offspring in the Winter. It's a marvel to watch nature have its own built-in system of survival and caste. The bees, when they split off search for a new place to live they even have a ritual on how to find the place. The scouts come back and do a bee dance and the one who gives the most favorable dance is where they move. These things are a wonder to Freddie, and he enjoys learning of the ways of the creatures that provide such sweet bliss.

I am an avid user of honey as a medicine and for its wonderful flavor. To find local honey producers and buy from them is the best way to go as local honey has all the ingredients to build the immune e system against local allergies. That's another great wonder of honey.

beekeeper. A friend of mine knew Freddie and she talked with him about me getting some honey. This is when I found out about Freddie and his situation. We have talked and I have the feeling I may have found a new friend. Honey can be a

means of a social connection and finding good friends is a great joy in this life.

With Freddie having to soon give up working with bees one would think this is a sad story, on the contrary. Yes, it's a bit sad, but there is another joy that Freddie has had the pleasure of being a part of in his life. His grandchildren caught bee fever and as young ones became mesmerized with their grandfather's work with bees. They grabbed hold of Freddie's passion for beekeeping.

He bought the boy and girl bee suits for children. He taught them the ways of the bee, and these are memories he shall have. They had to be near whenever Freddie worked with the bees, and they brought excitement that encourages Freddie. The pictures of them are precious and his granddaughter is a super bee girl. This is a learning experience for the children in many ways, such as a passion, work ethic, excitement and many other things.

When they are older, they may have their own beekeeping business. They would keep the honey flowing in other generations. Freddie Hughes is a man who has instilled the love of beekeeping in others and that causes him joy. With himself, his cousin, and his grandchildren we can say they are the family of sweetness for the ages. №



# When a Weed is Not a Weed Alyssum Flowers

A weed by definition is a wild plant growing where it is not wanted that may be competing with a cultivated plant. The concession is that often these plants *are* wanted, by pollinators, other arthropods, birds and animals because these "wild" flowering plants provide nourishment, habitat and protection from predators and inclement weather. Indeed, whether a native or non-native plant, patches of these oases are a welcome respite for animals and should be viewed as desirable in many places. In fact, they are essential to support many pollinators, butterflies and birds which are quickly disappearing from our backyard, regions, states and nation.

Research has shown a rapid decline in warblers and other birds as well as some species of bumblebees, honey bees and a myriad of insects that used to cover our vehicles' windshields with bug juice. In fact, globally, one study showed that insect abundance has declined 45% in 40 years. These insects, while some may be pests, are also a staple food for bats, birds, reptiles and amphibians and many mammals.

Ohio has the longest run survey of butterflies which has documented that in a 21-year long survey of butterfly species, of the 81 species monitored, the abundance of each species dropped 2% every year, resulting in a cumulative 33% reduction in butterfly abundance. Other states and national associations have noted the same pattern. Although pesticides are commonly blamed for the alarming annual loss of species, the dominant factor is lack of habitat and rampant urbanization in combination with destruction of wild patches of "weeds" and

woods. Many animals as well as pollinators and other arthropods require "corridors" of flowering plants and plant cover that connect the areas stripped of resources. Rarely do developed areas maintain these corridors to allow wildlife to thrive, yet people wonder why they don't see butterflies, etc.

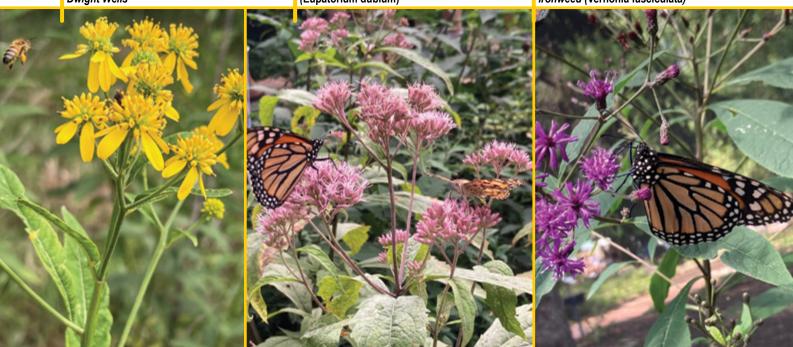
The Honey Bee Health Coalition (https://honeybeehealthcoalition.org/program/habitat-nutrition/) has worked with the USDA to improve CRP (Conservation Reserve Program) plant choices and guidelines specifically to enhance pollinator plants, in fact one of the options designed for pollinators is called CRP-Bee (https://www.fsa.usda.gov/programs-and-services/conservation-programs/index). Unfortunately, some restrictions and inadequate funding of the program deter many growers from participating, yet those who participate report higher honey yields and butterflies galore! Contact your local Farm Service Agency or Extension office to learn more about the program.

Everyone can help by planting strips or blocks of pollinator plants in their area and pressuring managers of solar fields, business parks and housing developments to plant as well. Each colony of honey bees requires one to two acres of flowering plants to obtain enough nutrition to support the colony and maintain defense against disease and stress. Remember that an average honey bee colony collects about 40 pounds of pollen and 265 pounds of nectar from the local environment each season, which is far more than one planting of flowers in a small area. Ideally, these plantings should be connected to benefit pollinators and other wildlife.

Picture 1 Honey bee on Wingstem (Verbesina alternifolia) Picture by Dwight Wells

Picture 2 Monarch and Painted lady butterflies on Joe Pye weed (Eupatorium dubium)

Picture 3 Monarch butterfly on Ironweed (Vernonia fasciculata)



With Autumn quickly approaching, now is the time to plan and plant for the future. Many universities, non-profit and federal websites list the best pollinator plants for your area. Keep in mind that non-native plants are acceptable for honey bees but avoid invasive species such as bush honeysuckle (*Lonicera spp.*) and purple loosestrife (*Lythrum salicaria*) which prevent native plants from becoming established. Order plants from local nurseries when possible or seeds from reputable companies for the healthiest stock and optimal success. Follow procedures to prepare the soil for seeding/planting and avoid using non-selective herbicides.

For maximal benefit to pollinators, select a range of plants that bloom from early Spring until late Fall with overlapping bloom periods. Plant in blocks of similar colors to attract larger butterflies and realize that birds, spiders and other creatures will be "invited" as well. Start with a few key "easy" plants then add to the planting as it progresses. Mow in late Fall after the goldenrod and aster have flowered, or if possible, in early Spring so that overwintering fauna can be protected.

For agricultural fields, leave a strip that can be mowed between the flowering plants and the crops. Research has shown a 10-20% increase in yield of soybeans when colonies of honey bees are located nearby, yet bees need more than a few weeks of soybean nectar.

A study showed that Americans maintain approx. 50 million acres of lawn in the USA, which consume \$18 million dollars' worth of chemicals and 10,000 gallons of water each, above and beyond rainfall, to keep them looking like the 18th hole of a golf course. A total of \$30 billion is spent on lawn care. Managed lawns are an environmental 'black hole'. Although turfgrass has its place,

it does not sustain pollinators and is overused, probably because it is easy to maintain, and the perception is that the owner is affluent. Most likely it may be that the owner is not home much or does not know or appreciate the needs of pollinators or the environment in the gated community. Together we can change this.

Talk to gardening groups, friends and co-workers. Show pictures of bees and butterflies on flowers and explain the urgent need to supply food for pollinators. Although some people do not think that they like insects, most enjoy seeing a butterfly or a song bird. The overused cliché that "it takes a village" is applicable for people to share in sustaining pollinators, but it takes more than a village, it takes planning, action and determination to reverse the trend before many of our species are gone forever.

https://journals.plos.org/plosone/article/file?id=10.1371/ journal.pone.0216270&type=printable

https://extension.illinois.edu/blogs/good-growing/2018-10-13-identify-and-manage-invasive-bush-honeysuckle https://www.invasiveplantatlas.org/

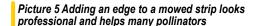
https://link.springer.com/article/10.1007/s00267-004-0316-2

https://www.canr.msu.edu/nativeplants/plant\_facts/ https://bees.caes.uga.edu/bees-beekeeping-pollination/ pollination/pollination-plants-for-year-round-bee-forage. html

http://www.nrcs.usda.gov/wps/portal/nrcs/
detail/national/plantsanimals/pollinate/
help/?cid=nrcsdev11\_001103

https://pollinator.org/PDFs/Guides/ EBFContinentalrx13FINAL.pdf (other regions available)

Picture 4 Native bee on Downey sunflower (Helianthus mollis)





### WAX MOTHS AND **HONEY BEES**

### An Old Combative Relationship



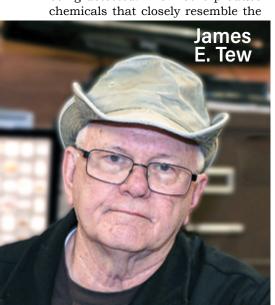
https://www.beeculture.com/wax-moths-and-honey-bees/ Listen along here!

### At First Glance...

Our old frenemy, the wax moth, is clearly a pest to both beekeepers and their bees. But for just a moment, consider the restrictive lifestyle that the moth has evolutionary chosen and the long coexistence that they have had with our bees.

Theirs have been a unique path. Just like ants, another longtime pest of honey bees, wax moths have been a part of the bees' lives for millions of years. Yet, I only discovered "the moth" to be a pest of honey bees when I began in beekeeping about fifty years ago. That's not even an eve blink in evolutionary time. As a foe of the wax moth, beekeepers only recently came on the scene. The actual relationship has always been between bees and moths - we are only interested bystanders.

The reality is that Figure 1. A streamlined, highly evolved hive invader. moths are very good at infiltrating the bee nest. The greater wax moth (Galleria mellonella) is known to mimic some of the pheromones of honey bees. This mimicry allows the moths to infiltrate bee colonies without being detected. The moths produce



pheromones bees use for communication, which helps them avoid detection by the bees and facilitates their entry into the hive. Bottom line, wax moths have been coming and going in the bees' nest a long, long time. This is not a new relationship.



On occasion, I have watched an adult wax moth dash around on a frame inside the colony. I would expect to see the bees rabidly attack the moth. Usually, they did nothing to punish the pest intruder. The moth was generally ignored. Bummer. That was disappointing.

### The Two Teams That Are Involved

Wax moths and honey bees are distinct species that have evolved specialized interactions, particularly in the context of honey bee colonies. This close relationship did not develop quickly (apparently).

### **Taxonomic Classification**

### 1. Honey Bees (Apis spp.):

• Family: Apidae (Eusocial bee)

•Genus: Apis

### 2. Wax Moths:

• Family: Pyralidae (Snout moths)

•Genera: Galleria (Greater wax moth) and Achroia (Lesser wax moth)

### Evolutionary Relationship and **Game Plans**

While both honey bees and wax moths belong to the class Insecta, their evolutionary paths deviated significantly. Honey bees are part of the Apocrita suborder, characterized by a

> narrow waist (petiole) and a division between the thorax and abdomen. Wax moths. on the other hand, are part of the Lepidopteran order, which includes butterflies and moths. Both bees and wax moths are insects. but they are very different insects. The relationship between wax moths and honev bees can be seen as a form of coevolution, where both species have developed adaptations in response to each other and continue to modify those adaptions as time passes.

Honey bees (genus Apis) are believed to have evolved around 30 to 40 million years ago. The specialized relationship between wax moths and honey bees, where the moths have adapted to live and feed within bee colonies, suggests a co-evolutionary process. This relationship likely developed over a considerable time frame, potentially over millions of years, as both species

evolved behaviors and adaptations in

response to each other.

Wax moths are essentially parasites of honey bees. Wax moths have evolved to exploit the resources within honey bee colonies, particularly beeswax, which serves as a food source for their larvae. The ability of wax moth larvae to enzymatically digest beeswax, which is a complex mix of long-chain alkanes, fatty acids and esters, demonstrates a highly specialized adaptation. This capability likely evolved as an opportunistic strategy to exploit the rich and somewhat protected environment within beehives.

### **Factors Influencing Evolution**

If living and eating within a bee hive was such a great idea, why have only two moths made the evolutionary transition? I don't know that there is a clear answer to that question and, of course, I am not including the microscopic pests that have adapted to living within the bee nest. However, a couple of possible reasons are presented below.

• Environmental Changes: Climate shifts and changes in vegetation and ecosystems could have impacted the availability of resources and the distribution of bee species, influencing the evolution of wax moths.

### · Bee Evolution and

**Diversification:** The diversification and spread of honey bees and other bees could have provided new ecological opportunities for wax moths, promoting their adaptation to different bee species and environments

Figure 2. Greater and Lesser Wax Moths eliminating a bee colony.



### A Long-term Battle

The damage caused by wax moth larvae can leave the weak hive more susceptible to infections and infestations by other pests and pathogens. The accumulation of frass (larval waste) and silk can provide breeding grounds for bacteria and fungi, further compromising the health of the bee colony.

But bees have not behaviorally given up. They have developed various defense mechanisms to protect their nests from wax moth infestations. These include:

 Propolis seals and barriers – Bees use propolis to seal cracks and crevices in the hive, temporarily preventing wax moths from accessing the colony.

- **Hygienic behavior** Some bee species have developed behaviors to detect and remove wax moth larvae or pupae from the hive.
- Maintenance not prevention

   it appears to me that bees have long since given up trying to keep wax moths out of the hive. Instead, they consistently monitor the hive interior for invading moth activities and deal with them as they occur. This is an example of host-parasite interactions.
- An arms race Over great expanses of time, wax moths have evolved to exploit the specialized niche provided by honey bee nests, while also over great lengths of time honey bees have developed various ways to defend against the moth invaders. This longtime, fluid relationship demonstrates the ongoing evolutionary race between these species, where each adapts in response to the other. Punch then

counterpunch. This evolutionary battle is far from over.

Wax moths, in turn, have developed mechanisms to avoid detection and predation by bees, such as spinning protective silk cocoons and producing pheromones that may mimic bee behavior. The silk cocoons are particularly ad-

ept at snagging an attacking bee and restraining her while the moth makes a getaway.

### A Small Bit of Wax Moth Benefit

From my perspective as a beekeeper, there is precious little reason to want wax moths around. Given that biased opinion, I should say that there actually are a few areas where the moths' activities can be viewed in a more positive light.

### **Natural Hive Maintenance**

In the wild, wax moths can play a role in the natural maintenance and recycling of old and abandoned hives. They help decompose and break down old combs, which could otherwise harbor diseases and pests that might affect other bee colonies. By cleaning out these old hives, wax moths can facilitate the natural decay process and make space for new colonies or other inhabitants.

### **Indicator of Hive Health**

Wax moth infestations are often a sign of a weak or declining colony. Healthy, strong bee colonies are typically able to forestall wax moths. Therefore, the presence of wax moths can serve as an indicator to beekeepers that their hive may be under stress due to disease, a lack of food or other environmental factors such as pesticide effects. This allows beekeepers to take timely action to support and strengthen the colony before the balance tilts in favor of the attacking moths.

### Research and Pest Control Innovations

Wax moths are often used in scientific research, particularly in studies related to pest control, insect physiology, and microbiology. For example, the wax moth larvae are used to study insect gut microbiomes and the digestion of complex substances like beeswax. Research into wax moth biology and behavior can lead to the development of better methods for controlling their populations, thereby reducing the impact on honey bee colonies.

### **Biological Control Agents**

In some contexts, wax moth larvae have been explored as biological control agents for other insect pests. For example, their ability to digest beeswax and other organic materials has led to research into their potential for managing various types of waste products.

### **Supplemental Protein Source**

In some cultures, wax moth larvae are considered a food delicacy and are consumed as a source of protein (Mexico, China, Thailand, India, and Uganda). While this does not directly benefit bees or beekeepers, it offers an alternative use for wax moths, potentially providing beekeepers with an additional revenue stream by harvesting and selling the larvae. To support this notion, human and animal consumption of insects is

currently a trending topic in popular media outlets.

### **Educational and Training Tool**

Wax moths can also serve as a practical tool in beekeeping education and training. By studying the life cycle and habits of wax moths, beekeepers can learn about pest management and the importance of maintaining strong, healthy hives. This knowledge can lead to more effective beekeeping practices and improved colony health overall.



Figure 3. Not much that I can positively say about this situation.

### Adaptation to a Specialized Niche

Wax moths have evolved to occupy a specialized ecological niche, exploiting the resources found within honey bee colonies. The key adaptations that facilitate this lifestyle include:

- Beeswax Digestion: Wax moth larvae have developed the ability to digest beeswax, a complex substance composed of long-chain alkanes, fatty acids and esters. This ability is rare among insects and likely evolved as a specialized adaptation to utilize the abundant wax in beehives as a food source. The larvae secrete enzymes that can break down the wax, allowing them to derive nutrients from it.
- Toleration of Hive Conditions: Wax moths are adapted to the warm, humid and protected environment of beehives. This adaptation allows them to thrive in conditions that might deter other insect pests.
- Physical Attributes: Wax moths are very streamlined. They hold their wings in a tentlike position. Therefore, the wings are not a hindrance within the crowded hive. Moths fold their antenna tightly against their body and only extend them when needed. Finally, wax moths are fast runners and will

dash about the comb. Within the hive community, they only fly short distances.

### **Wax Moth Life Cycle Adaptations**

Wax moths have a life cycle that is closely tied to their bee host environment:

- Eggs: Laid in crevices within the hive or on old combs. Eggs hatch into tiny first stage (instar) moth larvae can readily squeeze through cracks in hive equipment and flagrantly enter the nest to begin
  - developing. Eggs are not always laid inside the colony.
  - Larvae: The larvae are the primary destructive stage, feeding on beeswax, pollen, honey and debris in the hive. They also spin silken tunnels through the comb, providing protection from bees and a conducive environment for growth.
  - **Pupation:** Larvae pupate within the hive or in nearby

sheltered locations, eventually emerging as adult moths.

• Alternative Hosts: Wax moths can complete less successful life cycles on bumblebees, some solitary bees tropical stingless bees, and occasionally wasp and hornet nests. But clearly, their best food source is found in honey bees' nests.

### Geographical and Ecological Distribution

Wax moths are found worldwide, particularly in regions where honey bees are present. They have been inadvertently spread by human activity, mainly through the movement of honey bee colonies and beekeeping equipment. The maintenance of millions of non-natural hives and the general movement of bee colonies have provided wax moths with abundant new habitats and new opportunities to provide for population spread.

But there is a catch. In general, moths do not withstand cold temperatures well. Some areas may happily be wax moth-free during Spring months until moth populations can migrate back from warmer climates. But it is possible for adult moths to occasionally Winter in a healthy colony that provides warmth, food and shelter for their mortal enemy.

#### The Battle of the Wax Moths

Both the Greater Wax Moth (Galleria mellonella) and the Lesser Wax Moth (Achroia grisella) larvae rely on similar resources within the hive, primarily beeswax, but also pollen and honey. This overlap in dietary needs can lead to competition between the two species, especially when resources are limited. However, the feeding behavior of these two closely related moths is different.

- Galleria mellonella: The larvae of the Greater Wax Moth are larger and more aggressive feeders compared to those of the Lesser Wax Moth. They can cause extensive damage to hive structures, creating large tunnels and galleries as they consume wax.
- Achroia grisella: The Lesser Wax Moth larvae are generally smaller and less destructive, but they still feed on wax and other hive materials. They tend to inhabit the same areas as Galleria mellonella larvae, particularly targeting combs that are already weakened or damaged. For example, Achroia grisella might exploit finer, less structurally significant parts of the comb, while Galleria mellonella tackles larger, more robust areas.

However, both species can coexist in the same hive, especially in conditions where there is ample food supply. The presence of both species can exacerbate the damage to the hive, as they may collectively consume more resources and create more structural damage.

### **Management Considerations** for Beekeepers

Beekeepers must manage both species of wax moths to protect their hives. Control measures typically include:

- Maintaining Strong Colonies: Strong, healthy bee colonies are better able to defend against wax moth infestations. Obviously, strong colonies are not always possible.
- Regular Hive Inspections: Frequent inspections can help detect early signs of wax moth presence, such as webbing, visible larvae or Gallarasis.
- Hive Sanitation: Removing old combs and maintaining clean hive and apiary conditions can reduce the likelihood of infestations.

- Use of Traps and Treatments: Beekeepers may use traps, biological control agents or chemical treatments to manage wax moth populations.
- Exposing combs to air and light: In NE Ohio, I have had good luck stacking beeless boxes with drawn combs on their ends and allowing them to sit in the bee yard. This only works if the moths have not already invaded the equipment. At least, this is easy to do.

### So There - Moths and Bees

Bees and moths have had a relationship for a long, long time. In some ways, beekeepers have made life easier for the moth. But we these performed these assisting procedures for all the right bee management reasons. But as the bees have shown us, beekeepers will need to expect to deal with moths for eons to come. It's an old relationship.

In a future article, I will discuss "Gallarasis" or the condition in which developing bees are trapped in their cells by wax moth webbing. I am out of space for this month. Thank you so much for reading this piece. I truly hope you continue to enjoy beekeeping.

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













# **Honey Lemon Curd**

### Kori Pepper

Honey Lemon Curd is versatile and easy to make. With a few simple ingredients you likely have in your pantry already, this little bit of sunshine is a snap. Before we dive into this recipe, let's talk about curd. No, not the cheesy kind. For the unfamiliar, fruit curd is a condiment or spread similar to jelly or jam. The key difference is it's thickened to a silky consistency with eggs and sometimes butter for added richness. Fruit curd has lots of applications from a simple condiment on toast to jazzing up your favorite desserts, like cheesecake and sandwich cookies. Citrus curds, such as lemon, are the most common types found at a local grocer, however, I encourage you to try making other flavors, such as raspberry and rhubarb, especially if your honey has a distinct flavor profile! For our purposes here, the bright acidity of lemon always pairs well with honey's sharp sweetness, so it makes a great starter recipe if you have never made a fruit curd before.

### So let's get started! First, some kitchen notes:

- 1) Lemon's high acidity will react with and pit aluminum cookware, so be sure to use stainless steel or other preferred non-reactive cookware for this recipe.
- 2) The key to getting a smooth texture without any chunky egg bits is to whisk well at the beginning, then whisk constantly during thickening and watch your heat. Cooking at too high a temperature will give you soupy, lemon flavored scrambled eggs. If you do end up with a few tiny egg bits, don't fret: you can use a fine mesh strainer to strain your curd.
- 3) Make sure your butter is cold and cut into chunks before you start cooking your curd. You want it ready to go when you take your curd off the heat.
- 4) Don't worry if your curd looks a little thin while it's still hot, it will thicken up more when it cools. Once your curd is completely cooled and you decide you'd like an even thicker consistency, you can add one to two egg yolks to the recipe when making your next batch.



### **Equipment**

- □ 1-2 quart pot (not aluminum)
- □ Whisk
- □ Heat-proof bowl
- □ Microplane/zester
- ☐ Citrus reamer or juicer (optional)
- □ Plastic wrap

### Ingredients

- □ 9 oz honey
- □ 5 ea large eggs
- □ 1 tbsp lemon zest
- □ ¾ c fresh-squeezed lemon juice
- □ 4 ¼ oz cold butter, cut into chunks

### **Directions**

Yield: about 3 cups

### Step 1

In a sauce pot, whisk the honey, eggs, lemon juice and zest together until well incorporated.

### Step 2

Over medium-low heat, whisk your curd constantly and cook until thickened (if you're unsure, you can test it with a food thermometer for 160° F).

### Step 3

Once your curd is cooked, take the pot completely off the heat. Add your cold butter and whisk until fully incorporated.

### Step 4

Transfer to a heat safe bowl and allow to cool. You'll want to loosely cover it with plastic wrap touching the surface of your curd to keep a skin from forming.

### Step 5

Once cooled, transfer to a lidded container and your curd can be stored in the refrigerator for up to a week.

### **Get Creative**

Did I mention your curd is versatile? Use it to swirl into yogurt, plop onto pancakes and dress up your desserts. Lemon bars and cheesecakes are some of my favorites. For a simple, but snazzy treat, bake your favorite sugar cookie recipe and let cool. Top with a thin circle of your honey lemon curd and dust with confectioner's sugar.

### CALENDAR

#### COLORADO

Colorado State Beekeepers Association (CSBA) will hold their Winter Meeting on November 2, 2024 in Berthoud, Colorado.

Guest speakers, Presentations, Hands-On activities, and Bee Talk.

For more information go to:

https://coloradobeekeepers.org

#### ILLINOIS

Illinois State Beekeepers Annual Meeting will be Saturday, November 9, 2024.
Do you want to?

- · Learn more about Small Hive Beetles?
- Be able to recognize and understand queen events and possible actions a beekeeper can take?
- Identify stressors of a honey bee colony and what to do in order to address them?
- · Learn more about sustainable beekeeper?
- Learn about toxic chemical reactions in a honey colony and why and when to rotate out old comb in order to have a healthier colony and what synergistic chemical reactions occur in old comb?
- · Learn more about the special qualities in honey?
- Enter your honey product (s) into the November 8, 2024 ISBA Honey Judging Competition?

Featured speakers are Dr. Jamie Ellis and Bob Binnie More information and the presentation topics for the two featured speakers (Dr. Jamie Ellis & Bob Binnie) for the 11/9/24 meeting can be found at www.ilsba.com the Summary of Events page.

### REGIONAL

American Beekeeping Federation Conference and Tradeshow will be held January 7-11, 2025 at the Peppermill Resort Spa in Reno, Nevada.

There is a reserved block of rooms at the Peppermill Spa for a discounted rate of \$120 a night (plus applicable tax, fees, and a \$10 resort fee). The hotel is located on 2707 South Virginia St., Reno, NV 89502. Parking is free and there is a complimentary shuttle to and from the Reno-Tahoe International Airport. This event's topics target each level of beekeeping on a three-track schedule.

Keynote speakers include: Dr. Marla Spivak from the University of Minnesota, Dr. Geoff Williams from Auburn University, and Dr. Scott McArt from Cornell University.

This year as a special bonus, Project Apis m. will be presenting Thursday morning followed by a luncheon. Lunch will be a ticketed event. In addition, Apiary Inspectors of America and ABRC will again be in attendance.

Pre-registration for the American Beekeeping Federation 2025 Conference and Tradeshow is now open. Visit: https://abfnet.org/2025-abf-conference/for more information.

You may direct conference questoins to Dan Winter/Debbie Seib at abfnet.org@gmail.com.

### CLASSIFIEDS

Have something to sell? Have a job posting? Place a Classified ad for only \$1 per word!

Send a check or money order to:

Bee Culture Classifieds

623 West Liberty Street

Medina, OH 44256

Your ad will appear in the next available issue!

Any questions, contact Jen Manis: jen@beeculture.com

Contact Jen Manis to place an ad: Jen@BeeCulture.com





### Bee Culture

The Magazine of American Beekeeping

The Best BEEKEEPING Magazine in America!

- 12 Big Issues a Year
- Beekeeping How To, When To, Where To
- Urban Beekeeping Explained
- Paper and Digital Editions

Check out All of our Available Subscription Options

- Print -Digital -Print and Digital Combo

www.BeeCulture.com

International: www.Store.BeeCulture.com

#### Display Advertisers Gardner Apiaries ......74 R Weaver Apiaries.....69 Rayonier Land License ...... 57 Global Patties ......14 Roberts Bee Company......19 Hansen Honey Farm ...... 58 Ross Rounds......45 Hardeman Apiaries ......74 Rossman Apiaries ...... 50 American Honey Producers ...... 27 Hive Hugger......30 Autobiography of A. I. Root ....... 74 Honey Bee Health Coalition...... 70 Sailor Plastics......71 Humble Abodes ......81 Simple Harmony Farms – Hive Tool Barkman Honey......54 Bee & Butterfly Habitat Fund.....47 Simple Harmony Farms – Uncapper JZs BZs Honey Company......75 Bee Culture Advertising......71 Kona Queen......24 Bee Culture Classifieds......4 Spell Bee Company......74 Liberty Tabletop......59 Strachan Apiaries ......70 Mann Lake ...... Back Cover Beeline Apiaries ......70 Maxant Industries ......81 Meyer Bees ...... 13 Blue Sky Bee Supply Mike's Bees......91 Tauzer Apiaries......91 ...... Înside Back Cover Miller Bee Supply......45 Bucko Gloves......33 UMT ...... 58 B-Z Bee Queens and Packages .... 51 NOD ......11 VA State Beekeepers Association. 58 C. F. Koehnen & Sons......51 Olivarez Honey Bees Inc.....54 Olivarez – Help Wanted ......74 Catch the Buzz ......74 Complete Bee......75 OxaVap......58 Wicwas Press......39 Dadant - Winter ......31 Paradise Queen Hawaii.....24 Wilbanks Apiaries Dadant – Extractor ......25 Pierco Frames ..... 1 .....Inside Front Cover Dakota Gunness......23 Winters Apiaries ......74 Pollinator Partnership......70 Project Apis m......33 Ernst Seeds ......91 Propolis etc......44 Farming Magazine.....54 Queen Right Colonies ......71 Forest Hill Woodworking......69

# Image Contest - Winter Prep

We've started an image gallery! This month, we want to see any and all pictures you have of your **Winter Prep**. Could be feeding, treating, wrapping, any or all of those. 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.

### 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)

### If your image is chosen:

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.

s I walked outside, I told the gal Marilyn, "If you hear a big thud, it's just me falling off the roof."

This is fire country, and we have an oscillating sprinkler mounted on the roof. It covers the whole house and the ground around it. If it comes to it, we'll turn on that sprinkler before we evacuate. My insurance agent considers this highly creative.

It also makes a handy way to cool off the roof and at the same time water the flowers around the house. But our woodstove pipe is open under the cap from the sides. So horizontal roof sprinkler spray pours into the stovepipe.

Easy solution: Place a five-gallon bucket upside down on top of the cap and stovepipe. That's what I was on my way to do when I headed up on the roof.

The only problem was the asphalt shingles on the roof have, in the fullness of time, deteriorated. They're especially worn right around the woodstove pipe, where they see some traffic. The shingles have a rough surface like sandpaper, and when it wears off, it's like loose sand on that pitched roof.

I put up an extension ladder and climbed onto the roof but right away started slipping. When I lunged at the stovepipe, I missed and landed spread-eagled on the roof, right on the edge. I had nothing to hold onto and speculated that I might fall off. When I found the ladder with my foot, I only managed to push it away from me.

At this point I began yelling, and Marilyn came running. She anchored the ladder by standing on it, and she coached me down.

I've been on this roof countless times. But I'm so much older now, and my replacement knee can't be trusted. And yes, I could have rigged up a rope to hold onto, but of course I didn't.

I've done some dumb things in my long life and wonder how I've wound up so lucky. Falling 10 or 12 feet would have been a 911 call for sure.

Later, Marilyn rubbed it in: "I saved your life, you know!"

It's early August as I write, and the honey flow has been a disaster. OK, the high country's been pretty good, but the alfalfa down by the Colorado River's a big bust.

I lease a yard adjacent to a hayfield. Once upon a time it turned bright yellow with dandelions in the Spring. Then the alfalfa bloomed so purple it hurt your eyes. They didn't get around to cutting it until late. A beekeeper's dream.

Then the hemp boom hit and a bunch of fools went broke trying to get rich quick. This alfalfa ground got plowed up and planted to hemp. It sprouted all right, but then nobody took care of it. There were still some dandelions, but by the second year, when the hemp boys threw in the towel, the place had pretty much gone to weeds. The owner next brought in a well-regarded farmer who put goats on the weeds and then planted grass hay. There were still some survivor alfalfa plants out there, and last year my little darlings made a bumper honey crop. I have no idea how they did that, but bees will fool you.

This year they made just enough to stay alive. I found out too late that this ground never got any water. The owner leased his irrigation rights to get more Colorado River water to California. Fine, I guess, but he never bothered to inform the beekeeper. I found out from the hay farmer.

Big White, my one-ton '83 Ford Econoline van converted to a flatbed bee truck, has a little problem. I sit right over the motor, with only a leaky engine cover between me and that big 460. Fumes from a leaky exhaust get sucked up into the cab. I need to keep the windows open.

All right then. I don't have any truck payments, so I don't so much mind paying some repair bills to keep this beast on the road.

It's 80 miles to Scotty's Muffler in Grand Junction. With temperatures topping 100, I opted for a cool-of-themorning trip to the shop. Big White ran like a top. I cruised at 75 and was in the parking lot when the shop opened at 8:00.

The exhaust leak's getting worse, but with open windows I didn't have an air quality problem driving to Junction. I did bring along a gas mask, just in case.

The mechanic's report: They could replace my leaky, rusted-out exhaust pipes and muffler for \$1,400. They'd have to custom-build some pipes, the truck being so old.

But they're not interested in replacing the broken manifold bolts that also contribute to my problem. They gave me the name of a shop that might take on the job.

I'm sleeping on this. I'm guessing at least \$2,500 to repair a truck that I drive 1,500 miles a year. I just use it to haul bees and harvest honey. And I'm as old as dirt. Realistically, how much longer will I be keeping bees? Is this investment worth it? The truck runs as is. And I can always roll down my windows.

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!



 $egin{aligned} Up \ On \ The \ Roof \ \end{bmatrix}$  Ed Colby

# BOTTOM BOARD

# Blue Sky bee supply®

Get ready to sell the Prains of your labors



### BLUE SKY BEE SUPPLY

930 N. Freedom St. Ravenna, OH 44266 blueskybeesupply.com (877) 529-9233

12 oz.

Honey Comb

### **CUSTOMIZABLE** LABELS

starting at 250ct \$71.99

500ct \$94.99 with FREE SHIPPING

1000ct \$139.99



BLUE SKY APIARIES CUSTOMIZE UP TO 4 LINES OF TEXT

TO MAKE THIS DESIGN YOUR OWN

Gingham

12 OZ



Don't forget the finishing touches!



urptellicationer, less a panel scare to 1525/667. Fenance from best, and place container in parauntil Equation. Por not

GRANULATION: All natural honey will turn solid to reliquify, place jar in warm

WARNING: Do not feed oney to infants unde one year of age.



See all of our colorful flavors at blueskybeesupply.com!

### **HONEY STICKS**

Attract attention and increase sales! Up to 25 varieties to choose from. 50ct bags \$9 each

6+ bags (mix & match) \$7 each

### Take the short-cut!



Point your phone's camera over this image to be taken to our label options.



Once they try real honey. they'll never want any other! 500ct bag \$8.95

3000ct box \$34.95

ALL PRICES IN THIS AD ARE SUBJECT TO CHANGE

## Caps



### PRINTED METAL CAPS

Available in 2 designs & 2 sizes! 58mm to fit our 12 oz. skep jar or 12 oz. hex embossed cylinder. 43mm to fit our 3 oz. skep jar.



### **a** PLASTIC PANEL BEARS

2 oz Panel Bears \$70.21 / 160 Ct. Case WITH Caps 12 oz Panel Bears \$129.95 / 365 Ct. Case No Caps 16 oz Panel Bears \$98.95 / 200 Ct. Case No Caps

### Plastic



### **DECO EMBOSSED JUGS**

5 LB - \$103.95 / 72 Ct. Case 3 LB - \$127.95 / 126 Ct. Case No Caps 1 LB - \$140.44 / 300 Ct. Case No Caps CLASSIC PLASTIC JARS

### 32 oz - \$79.95 / 110 Ct. Case No Caps

16 oz - \$138.03 / 321 Ct. Case No Caps

### **SOUARE PLASTIC**

16 oz - \$259,95 / 343 Ct, Case With Lids



# Glass



### GLASS 3 OZ. MINI MASON

\$17.95 / 24 Ct. Case Lids now available in Gold, Black or White

### 🞧 GLASS 12 OZ. HEX EMBOSSED CYLINDER

\$11.95 / 12 Ct. Case Gold Metal Lids Included

### 12 OZ & 3 OZ GLASS SKEP JARS

12 oz Skep Jars \$16.95 / 12 Ct. 3 oz Skep Jars \$14.95 / 24 Ct. Gold Metal Lids Included

### **MUTH JARS**

4 oz - \$31.95 / 36 Ct. Case 8 oz - \$14.95 / 12 Ct. Case 16 oz - \$22.95 / 12ct, Case Includes Corks

### CLASSIC GLASS JARS

8oz - \$19.10 / 24 Ct. Case 16 oz - \$10.60 / 12 Ct. Case 32 oz - \$15.75 / 12 Ct. Case

**ALL PRICES IN THIS AD ARE** SUBJECT TO CHANGE

FOR BEES. FOR HONEY. FOR EVERYONE. (877) 529-9BEE

WWW.BLUESKYBEESUPPLY.COM



# FROM BEGINNERS TO EXPERTS, EVERYTHING BEEKEEPERS NEEDS IN ONE PLACE!

From syrup to suits to premium woodenware, Mann Lake has every beekeeping need covered.

Our high-quality tools are essential for a smooth, enjoyable experience, ensuring safety,
productivity, and happy bees throughout your beekeeping journey.

- Live Bees & Accessories
- Starter Kits & Hive Kits
- Frames & Foundation
- Protective Gear

- Smokers & Supplies
- Swarm Supplies
- Nuc Boxes & Supplies
- Feed & Medications
- Extracting Equipment
- Bottles, Jars & Labels
- Candle Making Supplies
- Mead Making Supplies







800-880-7694



