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NEBEEC

The Beekeeper's Digest

Issue 08

www.nebeec.org

10 May 2026



Welcome to the NEBEEC Beekeeper's Digest!

NEBEEC (Northeast Beekeepers Education Collaborative) brings beekeepers the best available and most current knowledge for practical beekeeping success. This monthly newsletter provides summaries and highlights of:

- Presentations to local bee clubs
- Journal articles
- YouTube videos
- Podcasts
- Research updates

NEBEEC also has an opt-in, collaborative Slack-based community for members to interact in. This community also has an embedded and customized AI chatbot for answering members beekeeping questions.

Forward this newsletter to other beekeepers you know! Spread the word.

To find previous issues or join the NEBEEC Slack community – visit nebeec.org

Suggestions or feedback? Write us at nebeec@gmail.com



Beekeeping Nuggets



We run unpaid advertisements for any interested bee or bee equipment supplier. We believe that a healthy beekeeping ecosystem requires a strong set of local suppliers – people you not only buy from but have relationships with. So, please shop local whenever possible – it helps us all! If there are other suppliers who would like to be included in future editions, please send your ad as a graphic of any kind to nebeec@gmail.com.

If you are interested in keeping up with **Tropilaelaps** research and observation, consider following and perhaps supporting Maggie Gill's organization - <https://www.phira-science.org/research/tropilaelaps>

Honey Bee Health Coalition will soon be publishing their 9th edition of their Varroa Management Guide. This will be the first update since 2022 and per Dr. Caron, will have a major and important update to varroa treatment thresholds.

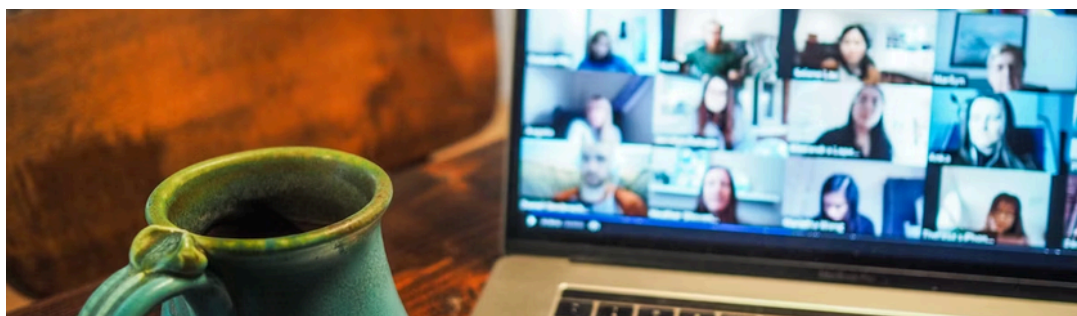
If you are in the Northeast US and have troubles with yellow jacket pressure in late summer like I do, this is a great time to put out traps to take out some yellow jacket queens. I caught 15 or 20 queens last spring – they are impressive. Whether it helped in our late summer dearth wasn't obvious – the pressure was still immense. I'll work harder on prevention this year as a result.

Massachusetts Department of Agriculture Resources (MDAR) is finalizing a **Tropilaelaps response plan** which will be the work of a large multi-disciplinary group. This looks destined to be the first such plan in the country and could be critical both for Massachusetts and for other jurisdictions which seem likely to leverage it. We will let you know when it is available.

MDAR will also be publishing an **identification guide for Yellow-Legged Hornets** very soon. Unfortunately, it didn't quite make our publication deadline, but we will send it out as soon as it is available.

Kamen Reynolds has announced dates for the 2027 North American Honey Bee Expo. It will be January 7-9, 2027 in Louisville at the same venue as last year. I attended it for the first time in 2026 and highly recommend it. See <https://www.nahbexpo.com/>

Upcoming Events



MDAR Honey Bee Education Days – May 8, 2026, Spring Management, 1-3pm. This event will be happening concurrently in 2 locations: University of Massachusetts Agricultural Learning Center Farm, 911 North Pleasant St, Amherst MA and Bristol County Agricultural High School, Standish House Admin Building, 28 Center St, Dighton MA.

Connecticut Beekeepers Association – May 14, 2026, 6:30-8:00pm EDT. Bill Hesbach leads the CBA monthly Q&A for members on Zoom on the 2nd Thursday of each month. <https://www.ctbees.org/upcoming-events>. These meetings are also recorded and are available for replay via the CBA website and (currently) made public on their YouTube channel.

At Home Beekeeping Series – May 26, 2026, 7:30-8:30pm EDT, Alexander McMenamin, US Department of Agriculture Agricultural Research Service will be presenting on “Overview of Honey Bee Viruses and Research Efforts to Combat Them”. See <https://www.aces.edu/blog/topics/bees-pollinators/at-home-beekeeping-series/>

Plymouth County Beekeepers Association – May 27, 2026, 7-9pm, Amy Musante will be talking about Swarms. 228 High Street, Hanson, MA.

MDAR Northeast USA Honey Bee Update Lunch & Learn Series – June 5, 2026, 12-1:30pm. This excellent series is back for 2026. It brings together apiary inspectors across the northeast to talk about the state of bees and beekeeping in the region. Registration required. https://us06web.zoom.us/webinar/register/WN_y5hKOVHyTuep7N7BoovQvA

COLOSS North America 2026 – Nutrition, Landscape Change and Honey Bee Health – June 6-12 <https://bees.wsu.edu/event/coloss-north-america-2026/>. This is an in-person international conference of bee researchers being hosted in the US for the first time by Washington State University. There is a rough agenda on the website though individual sessions haven’t been announced yet. On-line attendance is \$50.

Connecticut Beekeepers Association – June 11, 2026, 6:30-8:00pm EDT. Bill Hesbach leads the CBA monthly Q&A for members on Zoom on the 2nd Thursday of each month. <https://www.ctbees.org/upcoming-events>. These meetings are also recorded and are available for replay via the CBA website and (currently) made public on their YouTube channel.

MDAR Honey Bee Education Day - June 12, 2026, 1-3pm. “Summer Management”, Bristol County Agricultural High School, Standish House Administration Building, 28 Center St, Dighton, MA

MassBee Field Day – June 13, 2026, 9am-3:45pm. University of Massachusetts Agricultural Learning Center Farm, 911 North Pleasant St, Amherst MA. Register at <https://www.massbee.org/event->

[6614530](#).

At Home Beekeeping Series – June 30, 2026, 7:30-8:30pm EDT, Dr. Juliana Rangel, Texas A&M University will be presenting on “Queen Management Essentials”. See <https://www.aces.edu/blog/topics/bees-pollinators/at-home-beekeeping-series/>

Notes From Recent Live Events



At Home Beekeeping Series - April 28, 2026, Dr. Esmaeil Amiri, Assistant Extension Professor at Mississippi State University spoke on “**The Role of Varroa and Viral Dynamics in winter Honey Bee Losses.**”

Takeaways:

- There are at least **72 known viruses** that infect honey bees - and growing.
- Common Viruses:
 - Deformed Wing Virus: **May cause wing deformity** - but only if infection occurs in larva before wing formation. Even without deformity it can cause reduced lifespan and affect foraging capability.
 - Sacbrood Virus: Affects larvae, preventing pupation.
 - Black Queen Cell Virus: Prevalent in queen-producing operations; kills queen pupae.
 - Chronic Bee Paralysis Virus: Can cause shiny, greasy appearance, bloated abdomens, rapid colony collapse.
 - Acute Bee Paralysis Virus: Highly virulent, can kill individuals quickly.
 - Lake Sinai Virus: Linked to depopulation, less understood.
- **Most honey bee viruses don't cause visible symptoms** but can significantly weaken bees - reducing performance and lifespan.
- Viruses spread between colonies in many ways, e.g.: (1) Beekeepers moving frames between colonies or reusing tools between colonies. (2) Robbing, (3) Drifting, (4) Shared foraging sites, (4) Drones infecting queens during mating.
- Viruses spread within colonies by food exchange, queen feeding, mites moving between hosts and infected queens laying infected eggs.
- **Viruses can persist in wax and comb and are preserved by cold.**
- Viral loads (DWV-A, DWV-B, Black Queen Cell Virus, Lake Sinai Virus) rise in colonies that eventually die during winter. Surviving colonies manage to lower viral loads by late winter.
- **Viruses alone kill bees gradually; cold stress triggers mass mortality when most bees are already sick.**
- Hygienic Beekeeping:
 - Avoid transferring frames from dead/weak to healthy colonies.

- Sanitize tools (e.g., with bleach/Clorox).
- Prevent robbing and maintain apiary cleanliness.
- Avoid apiary sites with a history of disease or environmental stress.
- Start varroa treatments early and keep them low throughout the season
- Use young queens for higher productivity and genetic diversity.

There is ongoing research into selecting virus-resistant colonies.

Podcasts



Beekeeping Today Podcast - Varroa Management Guide Update with Dewey Caron, April 13, 2026.
<https://www.beekeepingtodaypodcast.com/380-varroa-management-guide-update/>.

Takeaways:

Dr. Caron has a new bee science podcast series. Each episode will be 15-20 minutes, combining research and field experience on a given topic. Dr. Caron is a superb educator and all the podcasts he does under the Beekeeping Today banner have been excellent. Episodes will be released on the 3rd Wednesday of each month.

- Honey Bee Health Coalition was established in 2014-15 to provide unbiased, science-based information on honey bee management.
- Dr. Caron leads the honeybee health task force, focusing on Varroa mite management.
- The 8th edition of the HBHC varroa management guide was published in 2022 and a significantly updated 9th edition will be available shortly. Watch <https://honeybeehealthcoalition.org/resources/varroa-management/>
- The new guide incorporates the latest research, chemicals, and best practices, **emphasizes the role of viruses as the largest threat to colony health. Most significantly, it updates the mite infestation treatment threshold to 1%.**
- Dr. Caron does an annual survey of beekeepers in Idaho, Oregon, and Washington to track overwintering survival, management practices, and colony origins.
- Key Findings:
 - Experienced and higher volume beekeepers have higher survival rates.
 - Overwintered colonies and swarms generally outperform packages and nucs, but results can shift by year.
 - Reports are tailored for local clubs to help them refine their education if needed.
- The survey helps beekeepers benchmark their performance and refine practices and supports research and education.

Beekeeping Today Podcast - Bee Swarmed with Mateo Kaiser, April 20, 2026.

<https://www.beekeepingtodaypodcast.com/381-/>. Mateo is the founder of BeeSwarmed, which helps match reports of honey bee swarms with beekeepers interested in collecting them. BeeSwarmed already has over 10,000 registered beekeepers. Even if you aren't interested in catching swarms, the network, data and community outreach that BeeSwarmed is facilitating is quite amazing. See <https://beeswarmed.org/>

Takeaways:

- BeeSwarmed is a non-profit and funds itself with voluntary contributions by beekeepers or small costs for some of its services (e.g., text messaging).
- BeeSwarmed allows anyone to report swarms via their website and sends notifications via e-mail, WhatsApp or text to registered beekeepers within the radius those beekeepers have signed up for. Swarms are claimed on a first-come, first-serve basis.
- BeeSwarmed uses AI photo recognition to filter for false reports (e.g., yellowjackets) - which were previously numerous.
- The BeeSwarmed team consists of Mateo, a developer, a data scientist, and a few volunteer research advisors.
- Across the BeeSwarmed community there has been a great deal of outreach including Google ads, information sent to over 14,000 libraries, 7,000 farmers markets, etc.
- So far, the BeeSwarmed community has done over 200 beekeeper talks at libraries, promoting public education and beekeeper involvement.
- So far, they have a 17,000+ database of honeybee swarm reports.
- Some upcoming features include:
 - Data Dashboard: Swarm heat maps, historical and predictive analytics by area.
 - Swarm Season Prediction: Uses satellite and weather data to forecast local swarm timing.
 - Swarm Trap Optimization: Suggests best locations for swarm traps based on tree height, urban density, and historical swarm data.
 - Alerts: Real-time notifications for peak swarm days based on weather patterns.
- Matteo is working with data scientists and researchers to validate and expand tool capabilities.

Beekeeping Today Podcast - Queen Biology and Quality with Dr. David Tarpy, April 27, 2026.

<https://www.beekeepingtodaypodcast.com/382-queen-bee-quality/>

Takeaways

- Good brood patterns are often attributed to queen quality, but research shows this is a collective trait influenced by both the queen and the workers. **“Bad” queens moved to different colonies often become “good” and vice-versa.**
- **Environmental factors** (e.g., mites, disease, pesticides) **can cause poor brood patterns**, not just queen defects.
- Many large-scale beekeepers requeen annually or even multiple times per year.
- There is anecdotal evidence that queen lifespans are decreasing, but no definitive data.
- The decision for a colony to replace a queen (supersedure) is complex, involving both queen condition and worker perception, which can be affected by viral infections or environmental toxins.
- Dr. Tarpy's lab offers a nationwide service where beekeepers can send queens for quality assessment (body size, sperm count/viability), providing empirical data and letter grades.
- Assessments show that environmental factors, not queen defects, are often responsible for perceived problems.

- No significant quality differences have been found between Italian, Russian, Carniolan, or Saskatras queens - variation within stocks is greater than between them.
- Some drone fathers are overrepresented among new queens a colony raises but are underrepresented among workers, suggesting complex genetic dynamics in queen selection by colonies.

Two Bees in a Podcast - Understanding Honey and Botulism with Dr. Joshua Jakum, April 23, 2026.

<https://www.youtube.com/watch?v=OctYKFmK4Mo>

Takeaways:

- Botulism is caused by the bacterial neurotoxin *Clostridium botulinum* and can cause irreversible paralysis.
- Even extremely small amounts can be fatal.
- Honey can contain botulinum spores - they can survive in low-water, low-oxygen, acidic environments. They are found in 7-10% of honey samples in the US.
- **Never feed honey to infants under 12 months.** Infants under 12 months old are susceptible to infection from honey due to immature gut microbiomes. **Even a single spore can cause disease.**
- Symptoms may begin with constipation, weak crying, poor head control, drooling, and fatigue and progress to floppiness and, potentially, respiratory failure.
- **Virtually all infected infants require hospitalization with 20% requiring breathing support. Recovery can take months.**
- Some states require warning labels.
- Gut microbiome is mature enough to handle spores safely after age 1.

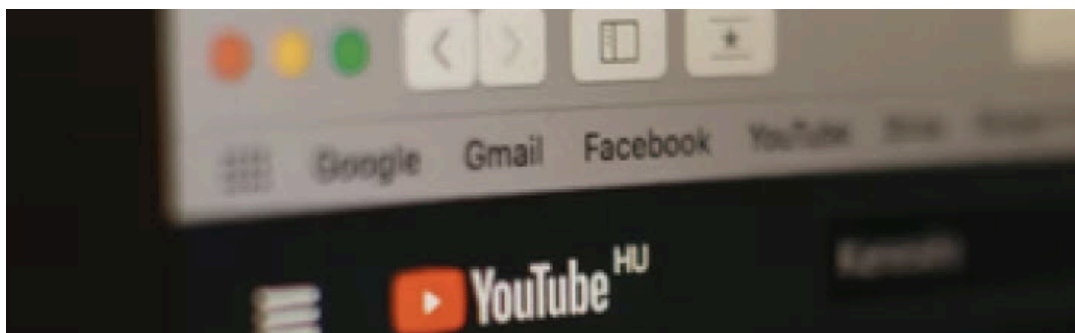
Two Bees in a Podcast - Viral Infections in Honey Bee Queens with Dr. Leonard Foster. April 23,

2026. <https://www.youtube.com/watch?v=v5NY7Qp5aLI&t=12s>. This podcast is another reminder about how we need to control viruses all the time. Even if the viral infections of workers are low, an infected queen can cause serious problems.

Takeaways:

- **Queens can be infected by all known bee viruses and often without obvious symptoms.**
 - There are many transmission routes - from queen to egg, from drone to queen during mating, bee to bee (e.g., via trophallaxis) and varroa to bee (and vice-versa).
 - **Infected queens may have reduced egg laying, smaller ovaries, lower sperm viability, and increased likelihood of being superseded.**
 - Research has lagged because of both the challenge of dealing with viruses and the cost of killing queens to test.
 - Research in Dr. Foster's lab has shown that **supersedure can be triggered by virally infected queen's** reduced output of methyl oleate - a component of queen pheromone. We reported on the October 2025 American Bee Journal article by Alison McAfee and research paper on this in our November 2025 edition.
 - **Queens exposed to temperatures above 104 °F may have reduced sperm viability,** leading to poor egg fertilization and increased drone laying.
 - Work with other labs tracking shipped queens has documented temperatures exceeding that threshold at times.
-

YouTube Channels



University of Florida (UFhoneybeelab) – Chalkbrood | Beekeeping Academy | Ep.89

This is a very short video (less than 6 minutes) in which Dr. Ellis does a great job describing and showing chalkbrood. It's so short here is no point in summarizing it - just give it a watch.

<https://www.youtube.com/watch?v=Xp8JpBflW28>

Recent Journal Articles of Note



Bee Culture, May 2026 - “Do Hygienic Bees Have Different Gut Bacteria”, p. 34-35. Yosef Hamba Tola, Kaira Wagoner, Olav Rueppel, David R. Tarpy, Micheline K. Strand. This article describes some work (see “Research Updates” below) which has found interesting differences in honey bee microbiome between hygienic-task performing bees and those that did not perform those tasks (e.g., uncapping and removing infected brood).

Bees examined all came from one of two colonies which tested as very hygienic based on the UBeeO assay. But only a subset of bees was responsible for these behaviors, and this was the basis for the comparison. Though a small number of bees were examined the microbiome differences were quite substantial with one bacterial species seen only in the hygienic-task bees.

There are many questions these observations raise which the work can't answer yet. Hopefully there will be a continuing string of papers from this group to help answer those.

Bee Culture, May 2026 - “Powdered Sugar Shakes - A Comparison of Different Methods to Estimate Varroa Mite Infestation”, Kim Guillemette and David Tarpy, p. 57-60. This is an excellent article describing tests of the accuracy of four different sugar shake procedures as recommended by

different authorities. This same problem of significant variation of procedures exists for alcohol wash procedures as well - I'm hoping this team will take that up next.

Some takeaways:

- Powdered sugar shaking as an approach for sampling varroa mites from adult bees was first suggested in the early 2000s.
- Despite long-term use, the mechanics of why powdered sugar causes mites to be dislodged from bees is not known.
- Depending on the authority, **sugar shakes are often said to be less accurate and precise than alcohol washes.** For example, Honey Bee Health Coalition's 8th edition from 2022 says "Use of powdered sugar shake is [a] less reliable (more variation in mite count) compared to alcohol/soap wash."
- Guillemette and Tarpy set out to compare the results of different methods suggested by: (1) USDA, (2) Honey Bee Health Coalition, (3) BetterBee, (4) Dewey Caron's "Honey Bee Biology and Beekeeping", 3rd edition.
- Before being able to do the testing they hardened the testing methodology suggested in each of these to help ensure testing consistency. In each case there was vagueness and ambiguity that needed to be removed.
- They also defined and tested a method of reliably counting all mites from a sample using a somewhat laborious alcohol washing technique. But this was an essential part of their testing - to be able to measure the capture rate of the sugar shake tests.
- The results showed that the four sugar shake techniques were all quite close to each other in terms of the percentage of mites that were recovered and were statistically equivalent.
- **In all cases, sugar shakes undercounted mites but rarely create false negatives for reaching treatment thresholds.** Note: The article doesn't indicate what definition of economic threshold they used was and given the more aggressive treatment thresholds more and more authorities are recommending (e.g., the updated Honey Bee Health Coalition guidelines), it isn't clear whether these minor discrepancies still hold.
- The authors noted that **sugar shaking accuracy became greater as the practitioners in the study did more tests.** I wondered if this was caused by the testers getting feedback from the alcohol washes as to their undercounting. But, no, Kim Guillemette replied to my ask on this that they never had that feedback - it was just improvement via repetition.
- **A significant problem for sugar shakes is that sugar can clump and become ineffective in high humidity.**
- Finally - for beekeepers using sugar shakes in the belief that it is less harmful to bees than the immediate and certain death from alcohol washes, see the paper on this in the "Research Updates". Spoiler - most bees which undergo a sugar shake die soon after.

Research Updates



Metz, B.N., Gallagher, P., Profet, P. *et al.* Impact of Two Common Beekeeper-Applied Chemicals on Honey Bee Queen Fecundity and Gut Microbial Communities. *Microb Ecol* (2026).

<https://doi.org/10.1007/s00248-026-02755-w>. This paper describes a study investigating the impacts of amitraz and oxytetracycline (Terramycin active ingredient) on honey bee queen fertility and their gut microbiomes and shows some very significant impacts.

Takeaways:

- Experiments were conducted in 2022 and 2023 at North Carolina State University apiaries using 40 colonies per year in 3 groups: (1) Treated with oxytetracycline 3 times, 5 days apart, (2) Treated with amitraz (Apivar strips) for 42 days, (3) Not treated.
- Queens were assessed for morphology, sperm count and viability and egg laying rate and egg viability. They were also assessed for any changes to gut microbiome.
- **The amitraz group showed a significant reduction in sperm viability (87.3% viability in controls vs. 65.4% in treated queens).** The oxytetracycline group showed no impact.
- Neither treated group showed a significant impact in queen size or brood survival.
- The oxytetracycline group showed a modest but statistically significant negative impact in gut microbiome. The amitraz group showed no significant difference.
- Exposure to amitraz reduces sperm viability in queens, potentially compromising long-term reproductive output and increasing risk of queen supersedure.

Bruckner, S., Williams, G. R., Tsuruda, J., & Underwood, R. M. (2026). **Let's not sugar coat it: the powdered sugar shake is not harmless for honey bee workers.** *Journal of Apicultural Research*, 65(1), 63-68. <https://doi.org/10.1080/00218839.2025.2550855>. This paper describes a study conducted to test the hypothesis that powdered sugar shakes are non-lethal to honey bees and to compare the efficacy of powdered sugar shakes to alcohol washes for mite testing.

- Takeaways:
- For each colony tested, 900 bees were removed and split into 3 equal groups.
 - Group 1 were marked and then had a standard powdered sugar shake - coated and shaken vigorously.
 - Group 2 were marked and then only coated with powdered sugar (i.e. not shaken).
 - Group 3 were only marked.
- 5 days later, marked bees were counted in their hives.
- In 18 colonies, a powdered sugar shake was followed by an alcohol wash on the same sample with the number of mites dislodged by each method being recorded.
- 44% of bees in the Powdered Sugar Shake group were recaptured after 5 days, compared to 72% (Powdered Sugar Coat) and 76% (Control). That is, **56% of the powdered sugar shake group bees are presumed to have died.**
- Because there was no significant difference between the Powdered Sugar Coat and Control groups - it is the shaking (not just sugar) causes harm.

- The powdered sugar shake led to significant bee mortality though not immediately.
- Mite infestation levels measured were similar between powdered sugar shake and alcohol wash but the powdered sugar shake's efficacy in dislodging mites was highly variable.
- Environmental factors (e.g., humidity, nectar presence) can **further** reduce powdered sugar shake reliability.
- Conclusions:
 - The powdered sugar shake results in significant bee mortality.
 - The method's effectiveness is inconsistent and sensitive to environmental conditions.
 - The alcohol wash is more reliable and is recommended as the primary monitoring

Tola, Y.H., Wagoner, K., Strand, M.K. *et al.* **The gut microbiome differs between hygiene-performing and non-hygiene-performing worker honey bees.** *Insect. Soc.* **72**, 397-404 (2025). <https://doi.org/10.1007/s00040-025-01029-x>method for mites.

Takeaways:

- Honey bee workers have a simple gut microbiome dominated by 8-10 bacterial types.
- Bees obtain gut bacteria through oral interactions and contact with hive substances in their first few days after emergence.
- The gut microbiome influences honey bee health, development, immunity, and behavior, including foraging.
- This work explored the relationship between honey bee gut microbiota and hygienic behavior - a link not previously studied.
- Bees were collected from two highly hygienic colonies using the UBeeO assay (synthetic unhealthy brood odor).
- 20 hygiene performers and 20 non-hygiene performers were sampled. Guts were dissected and stored for analysis.
- **Three species of bacteria were significantly more abundant in hygiene performers and, most significantly, one type, *Apibacter mensalis* was found only in hygienic bees.**
- Hygienic behavior exposes bees to pathogens, likely stimulating immune responses.
- Increased microbiome diversity in hygienic bees may result from greater contact with brood, hive debris, and cannibalism, potentially supporting immune development.
- The study did not determine whether the microbiome differences cause hygienic behavior or result from it - future work is needed but, practically, **this work has identified candidate bacteria for bee probiotics.**

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