

NEBEEC

The Beekeeper's Digest

Issue 13

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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. A new version of the chatbot was recently launched with updated models. A new feature allows "voting" on answers, which will be used to improve the model over time. Just give it a 👍 if you "like" the answer and a 👎 if you don't.

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

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

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



Beekeeping Nuggets



The 2027 North American Honey Bee Expo (January 7-9, 2027, in Louisville) has been announcing speakers recently. There are many popular returning speakers and many new and exciting ones. Among the speakers announced so far are: Bob Binnie, David Burns, Fred Dunn, Maggie Gill, Krispn Given, Jeff Horchoff, Zac Lamas, Eric Oliver, Ferhat Ozturk, Michael Palmer, Cory Stevens, Rogan Tokach and Robyn Underwood.

Vendors for NAHBE are also starting to publish their pre-order and event-only deals. Last year I made some mistakes and lost out on some deals. I'm going to be a lot more strategic this year. Mann Lake shipping was incredibly cost effective but I'm hoping to find someone who is willing to bring some things back for me as well.

Bob Binnie and Kamon Reynolds had a conversation on Bob's YouTube channel on issues they are seeing in their own operations, and which are apparently being widely reported about issues with two important miticides (<https://www.youtube.com/watch?v=X0oU2CQEn34>). Bob reported that the ApiGuard he used this year was generally ineffective and that, to his nose, didn't have the intensity of thyme oil that he is used to. They both talked about widespread reports of Apivar 2.0 causing large scale adult bee death and a significant amount of absconding. It will be interesting to see how these stories develop and what research being done tells us.

Upcoming Events



MDAR Honey Bee Education Days — October 16, 2026, 1-3pm. “Fall Management”. 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.

Worcester Beekeepers Association — October 17, 2026, 8:00am-4:00pm. Fall Conference with speakers Dr. Jen Tsuruda and Dr. Julianna Rangel Posada. Free for members, \$10 charge for non-members. Information can be found at: <https://worcestercountybeekeepers.org/event/october-17-2026-46th-annual-speakers-conference/>

At Home Beekeeping Series — October 27, 2026, 7:30-8:30pm EDT, Meghan Milbrath from Michigan State University will be presenting on “European Foulbrood”. See <https://www.aces.edu/blog/topics/bees-pollinators/at-home-beekeeping-series/>

NY Bee Wellness — October 27, 2026, 7:30pm EDT. “Randy Oliver’s Latest Work”. Register at https://us02web.zoom.us/webinar/register/WN_QudcDigETtK6DabuQdGHZQ#/registration. Randy does a talk for NY Bee Wellness around this time each year with an update on all the areas of investigation he is doing.

Connecticut Beekeepers Association — November 12, 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.

Massachusetts Beekeepers Association — Fall Meeting, November 14, 2026, 8:00am. Franklin Elks #2136, 1077 Pond Street, Franklin, MA. <https://www.massbee.org/event-6797654>. Speakers will be James Wilson from Virginia Tech, Theresa Martin (author of “Dead Bees Don’t Make Honey”) and Dr. Kim Skyrn.

At Home Beekeeping Series — November 17, 2026, 7:30-8:30pm EDT, Bashiru Adams from Mississippi State University will be presenting on “Exploring Semiochemical-Based Tools for Managing the Invasive Small Hive Beetle”. See <https://www.aces.edu/blog/topics/bees-pollinators/at-home-beekeeping-series/>

Connecticut Beekeepers Association — December 10, 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.

North American Honey Bee Expo — January 7-9, 2027. Kentucky Exposition Center, 937 Phillips Ln, Louisville, KY. I’m looking forward to going back this year! <https://www.nahbexpo.com/>.

American Beekeeping Federation — January 12-16, 2027. Moody Gardens Convention Center, Galveston, Texas. <https://abfnet.org/2027-abf-conference/>

Notes From Recent Live Events



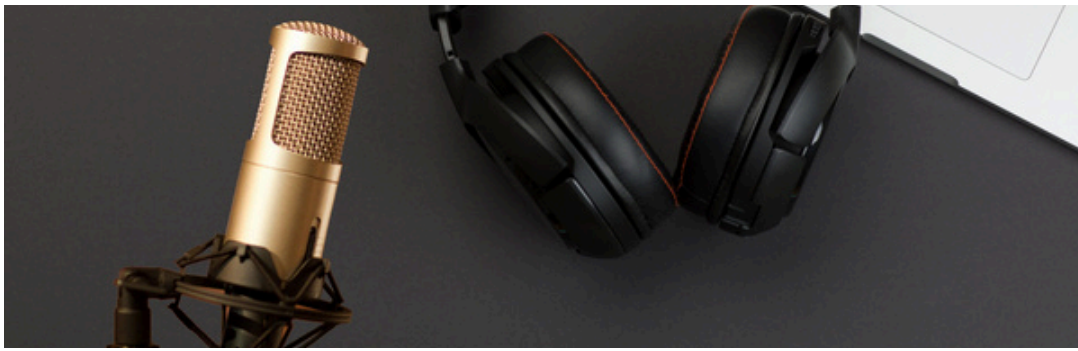
At Home Beekeeping Series — September 29, 2026, Dr. Dylan Ryals, Purdue University. “Breeding Better Bees”.

To be honest, I’m not sure that I should continue to cover articles about breeding since very few readers are breeders and the ones that are already know what they are doing! So, maybe after this one, I’ll take a break. There are plenty of other topics to cover after all. It does make me wonder why the topic is so popular in the various speaker series as well.

Takeaways:

- Dr. Ryals talked about identifying traits that are both at least partially genetic and are of interest to the breeder such as: queen health and longevity, disease resistance, hygiene, winter survival, productivity, swarming tendency and docility.
- DNA as the Genetic Code: Passed from queen and drones to offspring.
- Most mutations are neutral or negative, but rare positive mutations can be valuable.
- Many traits, (e.g., honey production) are influenced by multiple genes.
- Due to queens mating with multiple drones, worker bees in a colony will be a mix of genetics — making the entire evaluation and selection process more difficult.
- It is critical to have objective measurements for the traits being selected for which and which are stable over time to allow long-term comparisons and establish trends.
- Observed traits are a combination of genetic potential and environmental effects (Phenotype = Genetics + Environment).
- Need to separate environmental effects (year, location, management) from genetics to assess a queen's true potential.
- Evaluate the average performance of a queen’s daughters.
- Too much focus on a single queen line can reduce diversity and progress - breeding from multiple queens preserves valuable genes.
- Use weighted averages of multiple traits to guide breeding choices, based on goals.
- Mating Strategies:
 - Natural Mating: Queens mate with drones in the wild.
 - Controlled Mating: Use of drone-producing colonies or mating stations to influence or ensure specific genetic crosses.
 - Instrumental Insemination: Allows precise control over queen-drones crosses, useful for breeding but not feasible at scale.
- Many subspecies and breeds exist globally, each adapted to local environments (e.g., European dark bee, Italian, Carniolan, Caucasian, African).
- Breeds are distinct lines created by human selection, subspecies are naturally evolved.
- Recommended Reading:
 - "In Search of the Best Strains of Bees" by Brother Adam
 - "Queen Rearing and Bee Breeding" by Laidlaw and Page.

Podcasts



Beekeeping Today Podcast — Oct. 5, 2026, “American Honey, Russian Bees and the Work of the AHPA with Steven Coy”.

My operation has been moving toward Russian bees and this year I finally have all my colonies in all my yards with either Russian queens or their daughters. My source is Dan Conlon at Warm Color Apiaries — who is one of just 10 members of the Russian Bee Breeders Association. Steven Coy covers lot of the reasons that he prefers Russians. I’m obviously a big fan and proponent and think they are especially well suited for northern climates.

Takeaways:

- Steven is a third-generation beekeeper, entomologist, runs an 1,800-hive operation in Mississippi, specializes in Russian bees, and is AHPA president!
- AHPA primarily represents commercial beekeepers and focuses on lobbying, legislation, and advocacy for the industry.
- **Currently, there is no federal standard for what “honey” is in the US - imports can be mislabeled or adulterated with no legal recourse.**
- The Honey Integrity Act is trying to establish a federal standard, similar to those in Europe.
- Cheap, possibly fake honey undercuts U.S. producers. Vietnamese honey arrives at \$0.61/lb.
- Emergency Livestock Assistance Program (ELAP) compensates beekeepers for losses above a 15% threshold and acts as a safety net for producers.
- Coy’s family began using Russian bees after observing their superior winter survival compared to Italian bees.
- **Russian bees show strong resistance to varroa mites, small hive beetles, and American foulbrood, thanks to decades of USDA-supported breeding.**
- Russian bee strengths:
 - Lower mite loads and fewer disease issues.
 - Use less honey, smaller late-season brood nests, better survival in cold climates.
 - Comparable or superior honey production to other breeds.
- Russian bee drawbacks:
 - Slightly slower than Italians in early spring build up but catch up quickly.
 - Slightly more defensive than Italians, especially under stress (e.g., pollen dearth), but manageable with selection and proper handling.
 - To see true benefits, keep Russian colonies together in one yard to avoid mite drift from non-resistant stock.
- Coy treats his production colonies for varroa but uses untreated colonies for breeding.
- Mixing Russian bees with other stocks can dilute resistance traits; best results come from maintaining pure Russian apiaries.
- Varroa-Sensitive Hygiene (VSH) is present in Russian bees but located in different sites in their genome compared to other resistant lines (e.g., POL line)

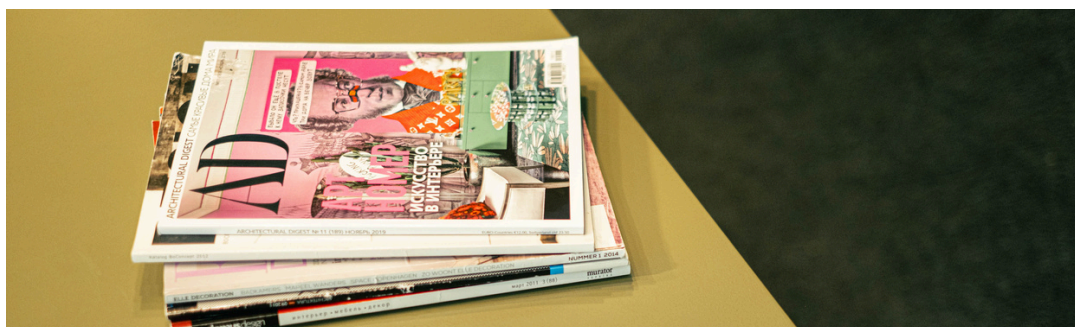
Two Bees in a Podcast — October 7, 2026, “Small Hive Beetle Control with Dr. Aaron Gross”.

Anecdotally it seemed like there were quite a few more hive beetles around in the central Massachusetts area this year. I didn't see any causing significant damage but enough, at least in some cases, enough to warrant traps. Perhaps a sign of increasing pressure going forward.

Takeaways:

- Small hive beetles (SHB) were introduced in Florida in 1998 (or perhaps South Carolina in 1996) and are native to sub-Saharan Africa.
 - Life Cycle: (1) Adults lay eggs in hives, (2) Larvae feed on various hive resources, (3) Larvae leave the hive to pupate in the soil, then emerge as adults.
 - SHB larvae feed on honey, pollen, and brood. They introduce a yeast that causes fermentation, resulting in slime and odors, which then attract more beetles.
 - SHB are attracted to certain smells, including alarm pheromone components (isopentol acetate) and pollen patties.
 - Dr. Gross' team investigated repellants which would impact beetles but not bees via "Electroantenography (EAG)". This measures electrical responses in beetle antennae to various odors. They also used an olfactometer to assess beetle attraction/repellency to different compounds.
 - They are pursuing a push-pull strategy – attractants to lure beetles away from hives (e.g., using pheromones or pollen patties) and repellants to discourage beetles from coming into a hive or to encourage them to leave a hive.
 - Because SHB adults can lay a large number of eggs (1000-2000 lifetime), just a few adults can lead to large infestations.
 - SHBs can exploit various resources and environments, making control difficult.
 - Even with barriers like concrete or plastic, beetles may find alternative pupation sites to the soil around a hive.
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Recent Journal Articles of Note



Bee Culture, October 2026 – “A Better Way to Overwinter?”, Charlotte Hubbard and Bob Candido, pages 73-75.

This was a very small piece of work comparing 3 overwintering strategies – just 13 colonies in total. What I liked was a confirmation of the rule-of-thumb that I've been using and telling anyone I present to – that condensing hives uses about 50% less food over the winter than ventilating hives.

Takeaways:

- Overwintering Methods Compared

- Condensing Hive (CH) - Mimics natural overwintering environments. R-30 insulation on top, R5 on sides, no upper entrance. DIY due to budget constraints.
- Ventilating Hive (VH) - Traditional method previously used in the apiary. 5/8" air vent/upper entrance, feeding shim-quilt box on top, styrofoam insulation (R-5) on all sides except the front.
- Michigan Minimalist (MM) - Minimal preparation – just secure against wind/animals. No wrapping or quilt boxes; simply a large brick on top. Used by Michigan State University for 140 hives.
- Colonies: 13 total, randomly assigned to one of the three methods.
- Configurations: Varied (8-frame, 5-frame; mixed box sizes).
- Preparation: All colonies received feeding shims, mouse-guard entrance reducers, and four gallons of 2:1 sugar syrup in the fall.
- Climate: 118 out of 151 days below freezing; 55 days never above freezing.
- 100% survival across all colonies, regardless of method.
- CH colonies lost significantly less weight (25% loss) compared to MM (49%) and VH (41%).
- CH and VH required 30-45 minutes per hive to prepare; MM required only placing a brick on top.
- Healthy, well-managed bees can survive severe winters with minimal intervention.

American Bee Journal, October 2026 – “New Analysis of Anderson’s 1943 Experiment on Ventilation of Hives Turns Anderson’s Conclusion Upside Down”, Derek Mitchell, pages 1105-6.

Derek Mitchell, who helped spur the move of many of us to condensing colonies, examines the data from Edwin Anderson’s very influential 1943 experiments. Mitchell has been a critic of this work for many years and given how its conclusions differ so dramatically from other work, such as Seeley’s work on swarm nest site preferences, I think it’s an important area.

Takeaways:

- Anderson’s experiment used thermometers, a 15-watt light bulb, and hives with/without a 7/16" diameter ventilation hole. Temperature inside hives (with and without ventilation) and outside air temperature were recorded. His conclusion was that temperature difference between ventilated and non-ventilated hives was minor (~1.4°F) and interpreted as negligible.
- Reanalysis shows that the non-ventilated hive averaged 17.2°F warmer than outside, due to the 15-watt bulb.
- The 1.4°F difference between ventilated and non-ventilated hives equates to about 1.2 watts of heat loss (8% of total heating).
- But heat loss is proportional to the area of the ventilation hole and commonly used ventilation holes can cause significant heat loss.
- For example, a 1" diameter hole (five times the area) would require a 40% increase in heating (21 watts total) to maintain hive temperature than in Anderson’s experiment.
- Anderson’s experiment, though simple, was misinterpreted.
- The prevailing view that top ventilation is harmless is incorrect; it can stress bees and impact overwintering survival.

American Bee Journal, October 2026 – “How and Why a Colony Increases the Ventilation of Its Home When the CO2 Level Inside it Becomes High”, Thomas D. Seeley, pages 1101-4.

This article is an extract from a chapter in Dr. Seeley’s most recent book – *Piping Hot Bees & Boisterous Buzz-Runners*. As part of studying for EAS exams I believe I listened to the audiobook version of it at least 4 times. It is a wealth of information about bee behaviors.

Takeaways:

- As Tom Seeley recounts in his most recent book, when he was quite young, he observed bees fanning at the entrance of a tree cavity nest and wondered about their purpose.
- Early literature described "fanners" as hive "air conditioners," maintaining ventilation and temperature.
- Seeley conducted experiments to determine what triggers fanning with the hypothesis that lower oxygen levels might be the cause.
- He first tried streaming nitrogen into a hive to displace oxygen but noted that while bees were narcotized, this did not stimulate them to begin fanning.
- Later testing and literature exploration confirmed that introducing CO₂ did trigger fanning within minutes.
- Further work showed that worker bees have olfactory cells on their antennae specifically sensitive to CO₂. These cells start firing rapidly when CO₂ exceeds ~0.5% and continue to fire if that level is exceeded.
- Experiments showed a significant increase in the number of fanning bees as CO₂ levels rose (peaking at ~10% CO₂).
- Fanning did not increase with nitrogen, confirming CO₂ is the key stimulus.
- Fanning bees at hive entrances can generate airflows up to 3 m/s.
- Nighttime measurements revealed CO₂ levels in hives can be 20-30 times higher than outside air (0.55%–0.92% vs. 0.03%).
- Larger, more crowded colonies had lower CO₂ due to more active fanning.
- Bees tolerate much higher CO₂ than humans; they often breathe air with ~1% CO₂.
- Bees can survive CO₂ up to 8–10%; above this, they become narcotized and may die if not ventilated.
- In winter clusters, CO₂ can reach 5–6%, still below lethal levels; bees may adjust cluster size to aid passive diffusion.

American Bee Journal, October 2026 – “Short-term Effects of Oxalic Acid on the Colony”, Danielle Besomi with Randy Oliver, ScientificBeekeeping.com, pages 1127-1133.

Per Randy in a note at the top of the article – this is the first of a new series of articles with a new idea that he is starting. Randy will be bringing us English translations of what he sees as important articles from around the world with information we otherwise might be missing. A brilliant idea, I think.

This paper was published by Danielle Besomi in an Italian journal in 2022 and was previously only available in Italian.

Takeaways:

- An application of oxalic acid (especially by spraying or dribbling) causes a significant and prolonged increase in hive temperature (over 30°C for 3–5 days).
- This temperature rise is linked to increased bee metabolism. The metabolic demand following **OA treatment leads to rapid depletion of honey and syrup stores.**
- Treated colonies show heightened activity—earlier and more frequent flights, increased fanning, and internal agitation.
- OA treatments often induce a resumption of brood rearing, even during normal winter brood breaks.
- OA spraying requires removal of frames and causes the greatest disturbance – leading to prolonged temperature and metabolic spikes. Dribbling is similar.
- OA vaporization causes a less pronounced and shorter-lived temperature rise, with minimal disturbance.

- Sugar and glycerin in OA solutions increase the acid's effectiveness by retaining moisture, promoting contact action, and prolonging bee irritation.
 - OA is not harmless; it causes significant irritation to bees but does not usually result in high bee mortality.
 - Recommendation - Only treat when strictly necessary, especially avoiding repeated OA use when brood is present.
 - If a second treatment is needed, consider vaporization or a milder formulation to reduce bee distress.
 - Ensure colonies are broodless before OA treatment to maximize efficacy and minimize harm.
 - So, when using OA, be prepared for higher food demand post-treatment.
 - Be aware that OA may trigger brood rearing during winter, which can complicate varroa management and resource planning.
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Research Updates



Eliash, N., Endo, T., Hua, X. *et al.* **Varroa mites escape the evolutionary trap of haplodiploidy.** *Nat Commun* 17, 10392 (2026). <https://doi.org/10.1038/s41467-026-77125-8>

This is an academic but still quite interesting update to our understanding of varroa reproduction. It is well understood that varroa are haplodiploid and that foundress mites first lay an unfertilized egg which develops into a male and follow with a series of fertilized eggs which develop into females. The male subsequently mates with its sisters. This paper expands our understanding of why this doesn't lead to genetic bottlenecks.

Takeaways:

- Parasites face repeated genetic bottlenecks and inbreeding which should be expected to reduce genetic diversity and adaptability.
- Somehow, varroa show high adaptability – e.g., rapidly evolving resistance to pesticides.
- Haplodiploidy reduces effective population size, especially under inbreeding - males transmit only half the maternal genome. This is considered an "evolutionary trap" with little potential for reversal to diploidy.
- Analysis of three-generation crosses show varroa males inherit both maternal alleles and transmit them to daughters.
- Analysis shows that varroa males, produced from unfertilized eggs, are diploid clones of their mothers.
- Males transmit both maternal genome copies to daughters, preserving genetic diversity.
- This has short-term benefits – protecting against mutations and inbreeding depression.
- It also has long term benefits, increasing effective population size and evolutionary potential and explains varroa's adaptability and invasive success.

Deutsch KR, Quezada TA, Cody LV, Ng WH, Muñiz PA, Boncristiani H, Ray S, McArt SH. **Controlling Varroa destructor infestations in managed honeybee colonies limits virus spillover into wild pollinator communities.** Proc Biol Sci. 2026 Sep 23;293(2079):20260321. doi: 10.1098/rspb.2026.0321. PMID: 42772764. <https://pubmed.ncbi.nlm.nih.gov/42772764/>

Interestingly, one of the EAS Oral Exam questions this year was to address a proposed banning on honeybees in a community based on the claim of harm to other pollinators. There is some reality to this potential harm though, compared to other harms such as habitat loss and pesticides, the harm pales. This work demonstrates that we can help the situation but just doing our own jobs well – if we keep varroa “under control” (quotes intentional) in our colonies, it reduces our own DWV infection rate and the rate of transmission to other pollinators.

Takeaways:

- Insect pollinators are declining globally, threatening biodiversity and pollination services.
- Managed honeybees can transmit viruses to wild pollinators via shared floral resources.
- Varroa facilitate the spread and increased virulence of Deformed Wing Virus (DWV) in honeybee colonies and DWV is now widespread in pollinator communities as a result.
- A study was done across 27 apiaries in New York State with samplings of nearly 1000 pollinators (honeybees, bumblebees, other wild bees, hover flies) and 350 goldenrod flowers.
- Colonies were categorized as ‘above’ or ‘below’ 3% mite infestation threshold (treatment recommendation).
- Quantitative PCR was used for DWV detection and load quantification on flowers and bumblebees.
- Major finding - Colonies below 3% infestation threshold had >100-fold lower DWV loads. Higher varroa loads strongly predict higher DWV loads in honeybees.
- DWV Prevalence: 26% of flowers tested positive for DWV.
- Higher varroa loads and greater honeybee visitation rates increase DWV prevalence on flowers.
- **DWV was detected in 64% of bumblebees, 40% of other wild bees, and 22% of hover flies.**
- **Apiaries below the varroa threshold had 35–85% lower DWV prevalence in wild pollinators depending on species.**
- Infected honeybees deposit DWV on flowers, allowing for transmission to wild pollinators.
- Honeybee density and apiary placement influence spillover risk; siting apiaries >600m from sensitive habitats reduces DWV on flowers.
- Conclusions - sustainable varroa management and responsible apiary placement can protect both managed and wild pollinators.

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