

# Bee friendly

A Newsletter of the New Mexico Beekeepers Association

[www.nmbeekeepers.org](http://www.nmbeekeepers.org)

Fall 2021

## Outreach! A Lovely Day at the Rio Arriba County Fair

*By Ashley Veihl, ABQ Beeks facilitator and CBeeks Level II student*

On August 31st, Steve Black and I went out to the Rio Arriba 67th Annual County Fair in Abiquiu. The fairground was alive with the sounds of music and pleasant conversation--welcoming hubbub after a year and a half of events such as this one being canceled. With us, we brought our typical cache: a table, handouts explaining the affairs of NMBKA, how to make homemade seed balls, and queen-spotting posters. But our secret weapon, the one that easily made our booth one of the most heavily trafficked of the day, was an observation hive containing live bees.



The observation hive gives people (even those who are wary of bees) a chance to see honeybees in action and up close. They see the workers doing things like capping honey and larvae, cleaning out cells, and unloading pollen from their pollen baskets. It gives a more “hands-on” approach to explaining the functions and importance of a hive. There’s a realness that sets in when describing a bee’s

actions when you can say, “Look what she’s doing right there!” Perhaps more importantly: it draws in a crowd. A few hundred people stopped by our booth that day, whether it was to inquire about beekeeping or simply marvel at the bees, but all of them left having been inches away from a frame full of hard-working pollinators.



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**Fall 2021**

*Our newsletter is a quarterly publication of the New Mexico Beekeepers Association (NMBKA).*

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## Message from the President

*By Steve Black, President, Board of Directors, NMBKA*



I hope you are all having an enjoyable beekeeping season. Since we are experiencing a strong monsoon pattern this summer so far, I have heard and seen reports of unusually large honey harvests. How cool is that? Finally, decent summer rains!

Our NMBKA summer conference was held on August 7th. In the day-long event, five great speakers shared information on a variety of beekeeping topics. If you missed all or some of the conference, NMBKA members have access to all six conference talks via the NMBKA website. Our silent auction was a big success, thanks to our generous donors and bidders, bringing in almost \$2,800.

In my fourth year keeping bees, I now have a total of nine hives (compared with three last year)--three top bar hives and four Langstroth hives on my property and two additional Langs sited in Nambe 20 miles away but closer to a strong source of water. The Langs I have on my property continue to lose queens; despite waiting patiently for queen cells to hatch, I have yet to have a queen return from her mating flight. Oh well... thank goodness mated queens can be "flown in" from California.

After a year off due to COVID, I am a second year CBeeks student. Level II has been described as "graduate school" in that there are fewer classes but numerous independent study opportunities, mentoring time with seasoned NM beekeepers, and volunteer opportunities, including community outreach. I look forward to being "pinned" in October. Thanks to Mark and Beth Sommer for leading this important two-year program for new beekeepers.

I have continued my bee rescue endeavors with my beekeeping buddy Ryan, and so far this year, we have done two cutouts and two trapouts, all of which have been great learning experiences. I even bought a small used pickup truck, better for carrying all the gear involved in beekeeping on the go!

While one of our newer board members, Tom Soltero, had to resign due to work obligations, we have found a wonderful replacement in Anita Feil, who in addition to adding her energies and experiences to the board has agreed to take on the role of Secretary. Welcome Anita!

We will soon begin planning for the winter conference in early February 2022. At this point, we plan to be in-person at the South Broadway Cultural Center (SBCC), with a nationally recognized guest speaker visiting us here in NM. It will be great to be in-person once again, allowing us to mingle with old friends who we have not seen in awhile, and meet our new members. We will likely include a Zoom option for those members who are unable to travel to Albuquerque, and perhaps use it to invite additional speakers from across the US.

In closing, now is a good time to get your bees ready for winter, including leaving plenty of honey, testing for mites, and treating if necessary.



## ....And the Mother of All Outreach: the State Fair



**B**ees, brochures, banners, and “NM Bee KA”! The State Fair is a huge undertaking of organization, planning, coordination, culminating in the work of dozens of volunteers weeks before, during, and after the 10-day fair. It’s the Outreach event of the year, accomplished largely by current CBeeks, graduates and alumni of the certification program. For the third year (minus Covid year 2020), Sarah Simms and Marisa Wagner have done the heavy lifting—sometimes literally. The artistry of Brittany Chavez and Lynette Ewer came to the fore with the two display cases decorated with “Everything Bee” abutting the table. Marisa and Sarah now pass the torch to Brittany and Lynette to be in the lead for the next two years. Steve Black, Lynette and Marisa brought live bees in demo hives for seven of the 10 days. Allison Moore and Jade McLellan designed and produced the new NMBKA banner featured prominently at the booth. The public was grand and the children adorable. Bees of course were the main attraction. Thanks to all beekeeper volunteers (19 in all) who sat the tables and talked bees, bees, bees for hours on end. It was a very good year.



## Summer Conference, According to the Board

*For those of you who weren't able to attend the webinar, in whole or in part, on August 7th; the NMBKA conference committee picked their favorite talk among the five and here present you with what sparked their interest to pique your curiosity to view the presentations again or for the first time. The recorded talks are available to paid members and can be retrieved on the website [nmbeekeepers.org](http://nmbeekeepers.org). If you aren't already a paid member, it's not too late to sign up now, enjoy the past two conferences online, and attend the next two in winter and summer of 2022. Happy viewing!*

### "Reading the Combs" -- Randy Oliver

*By Kathy Grassel, newsletter editor and board emeritus*

Just as many modern people these days will say, "I've got an app for that," Randy Oliver can say, "I've got a graph for that." While one of his well-known skills is graphing efficacy of mite treatments and other solutions to disease through the seasons, true to form, Randy has graphed us – not bees -- spanning our beekeeping lifetimes as we relate to our bees and our experience. At first our confidence spikes as our first colony thrives, then it troughs when our colony crashes, and then levels out mid-range as we continue learning. True for me. How about you?

Randy tells us straight off that he is not going to tell us how to keep bees. He also advises avoiding a Google search of "Beekeeping," which will yield an astounding 32,500,000 hits that represent all manner of strong opinions. We must make our own management decisions. First, he says don't do *anything* unless you understand *why* you're doing it. Have a plan!

Between the lines here is that people who don't know *why* are going to be spending way too much time in the hive, more likely to rile up the bees, more likely to get stung, more likely to fumble and drop bars or frames, more likely to make a big mess. Randy says commercial beekeepers with hundreds of hives can be in and out of a hive in a matter of seconds! We hobbyists, well... So believing Randy, it's impossible to know why you're there unless you practice, yes, reading the combs. Randy showed us plenty of examples from basic to advanced, from healthy combs to diseased. I encourage everyone to watch his presentation. Guaranteed no matter how advanced you are, you will learn something new, at the least have something confirmed that you've been unsure about.

At some point, beginning beekeepers watching this talk may begin to despair. Randy agrees that the learning curve is steep. He says he has more questions now about beekeeping even while he has spent his life answering questions. He has four field trials going on right now to answer some of those. So, beginners, take heart. Some advice that I may not have had the heart to try when I started, but: Start with a weak or small colony and get in every day. You're going to make every kind of mistake. You're going to kill queens, smash bees, drop honeycomb and drown bees, get stung, forget to zip your veil, get stung again, botch your mite check – all part of the learning curve. After learning from these experiences, you're set to have a plan and go forth with confidence.

I've always been squeamish about killing bees using an alcohol wash instead of a sugar roll for mite checks. Randy disabuses us of that reluctance. He says at least 1,000 bees a day are dying of natural attrition and the queen is replacing them at the same rate. He likens the sacrifice of 300 bees to us giving a blood sample to keep ourselves healthy.

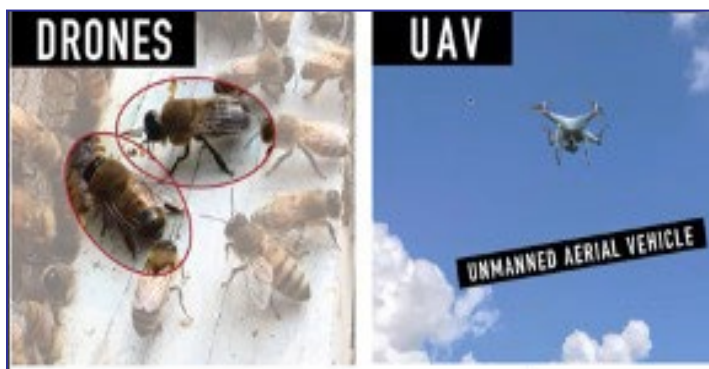
Another of Randy's valuable suggestions for us beekeepers, no matter where along that learning curve: Copy consistently successful local beekeepers. Randy says you can recognize them by their main problem ... TOO MANY BEES! This means they have been able to successfully overwinter their colonies, meaning their queens, workers and drones are adapted to the environment, meaning that they have mite-resistant stock, meaning that they regularly split colonies to prevent swarming, meaning they are looking at the world through the eyes of the honey bees, rather than those human eyes that have 32,500,000 conflicting opinions about how to manage their bees.



## "Game of Drones" -- Julia Mahood

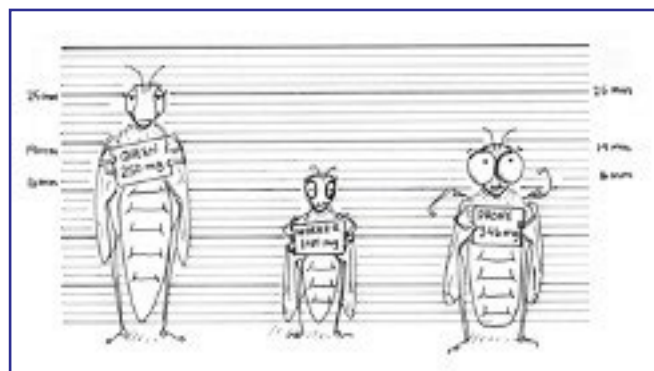
*By Steve Black, NMBKA president*

While I have seen Julia Mahood give a similar presentation twice over the past year at other beekeeping conferences, I was perhaps the most excited to hear her talk at our conference. How cool to combine the technology of unmanned aerial vehicles to the study of honeybee reproduction!



But first, Julia, a Master Beekeeper from Georgia, spent time adding to our basic knowledge of the honeybee drone. My limited knowledge of drones would lead me to tell people who asked, "They don't do anything... They just take up room in the hive and stand around and consume honey." In fact, Julia calls them the Rodney Dangerfields of the bee world... "They get no respect."

It turns out drones are integral to the health of the colony, and having drones in your colony is an indication of colony health and prosperity. In the pic below, she equates how drones appear to female worker bees, to a similar appearance of the human male species! Who knew drones were such "hunks"?



Julia is also a graphic artist and created clever, whimsical drawings to accompany her presentation.

Julia shared many interesting facts about drones and Drone Congregation Areas (DCAs) that were news to me. She has been interested in drones for quite some time and initially sought out the DCAs using a helium-filled weather balloon and binoculars. She soon got the idea to use a UAV equipped with a video camera with a strip of queen pheromone dangling below. She generously shared many tips and tricks with us that she learned over time that can increase one's chances of success in finding Drone Congregation Areas near our apiaries. She has created a citizen science website where she invites others from across the globe to report DCAs discovered using her methods. Check it out at <https://mapmydca.com>

Could I actually get a drone and do this myself? Perhaps instead of investing in one and having to learn how to fly it, I will try to find a UAV club as Julia suggested. She said that often drone pilots are looking for interesting things to do with their UAVs. Now all I have to do is find a UAV pilot in the Santa Fe area who thinks looking for male bees flying in groups waiting for a queen bee to come along is interesting!

## "Fat Bees: The Winter Survivors" -- Tina Sebestyen

By Steve Black, NMBKA president

Since one of the main desires of most beekeepers is to do everything we can to help our colonies make it through the winter, Tina's talk sparked my interest from the start!

Believe it or not, August is the time that bees are already preparing for winter. She reminded us that our bees need more going into winter than just having enough honey. They need a low mite load, lots of bee bread, security from predators such as mice, protection from wind, a strong (perhaps young) queen, an upper exit... and lots of winter bees!!

Fat winter bees don't appear fatter, but have added fat in their bodies. Tina shared how fat winter bees are made, how to influence the number of fat winter bees, and multiple reasons why fat bees do better in winter, most of which I had never heard before.

Tina is an advocate for going into winter with "young queens"...queens that have not gone through a spring buildup. This may involve requeening... which honestly is hard for me to imagine doing, especially with a queen that



has been laying really well.

She suggested not naming your queens, which many beekeepers like to do, as it will be easier to "dispatch" them when they are being replaced. Tina suggests, "If Rosella is old...Rosella needs to go!" Oh my gosh!

Another suggestion Tina made that I will seriously consider trying, going into winter, is to use a couple of medium frames in the center of a bottom Langstroth deep brood box, below which an ideal location for the bees to cluster is created, which may help our bees stay warmer.

If you have not seen Tina's presentation, it is available on the NMBKA website and is sure to provide a number of tips on winter preparation to both new and experienced beekeepers.

*Tina comes to us from Colorado where she has served in many leadership and educational positions for beekeepers. She has created a Master Beekeeper program for the state of Colorado, and we hope to collaborate with her in the future regarding our Certified Beekeeper Program.*

## "Chasing Varroa and the Wild Fungi" -- Jennifer Han

By Anita Amstutz, [Think Like A Bee](#), NMBKA board member

If any of you can empathize with the weariness of staying abreast of mites and parasitic mite disease and the importance of rotating mechanical, soft or hard chemicals in the hives, you'll understand why I was bursting with joy as Jennifer Han spoke! The ongoing testing and treating of mites, along with their devastating effects on hives, has made what began as a fun hobby more tedious, exhausting and sorrowful year after year. I have eschewed hard chemical treatments in favor of mechanical or soft treatments, so her presentation was a breath of fresh air. Here was a young woman in beekeeping and research, coming up with life-giving solutions in this race against colony collapse and the dreaded varroa mite.

Jennifer Han, PhD in plant biology, beekeeper and post doc professor of entomology at Washington State

University, enticed us with her research in plant-based, fungal extracts for varroa destructor control in the hive.

First, Jennifer noted the four deadly "P" challenges for honeybees—*Parasites, Pathogens, Poor nutrition, Pesticides*, then gave us a short lesson in the ugly biology and life cycle of a varroa destructor mite. She laid out the devastating effect of mites on the fat bodies of bees in the brood—its capacity to destroy the bee's immune function, decrease storage and synthesis of proteins and fats, dysregulate metabolic thermoregulation, and decrease ability for the bee to detox pesticides. One mite-infested fat body, multiplied by tens of thousands in a hive, most certainly will take down the strongest colony if mites are not brought below threshold by winter.

WILD FUNGI—CONT. NEXT PAGE

Jennifer spoke of how biological controls or “*directed evolution*” can improve the hive’s own resistance and resilience by creating a natural response to mites. Because the treatments she is researching are bio-directed rather than fixed, as are organic compounds of a single chemical, it allows the bio-control to evolve within the beehive, making it difficult for the varroa to develop resistance. Jennifer’s research included combining the fungi metarhizium with oxalic acid for the synergistic effect of mite control. To Jennifer’s surprise the mortality of varroa skyrocketed! Her main research though, is injecting rice with metarhizium, corrected for heat and shelf stability, providing the right ratios for a honeybee hive so that they can forage on this tasty and nutritious formula in the hive—lethal to mites.

Fungi medicinal properties are legion. Jennifer named some of the amazing nutritional values of fungal extracts, including anti-viral, B vitamins, minerals, polyphenols

for immune boosting, sterols, and amino acids, and chitin for bee’s exoskeleton. Surprisingly, in studies, bees are found to forage on mushrooms, having evolved their own precision for finding nutritional sources.

We eagerly and not so patiently await Jennifer’s patent for this elegant solution—even as we toil in the dungeons of mite-laden hives with only organic chemicals at our disposal.

As a beekeeper, I look to 2022 to bring this biological treatment for varroa destructor to our toolbox. Something that not only bring nutrients to the hive, but immunity against this dreaded evil that has assailed honeybees for too long.

May our hives, and our wild bees, prosper in health and longevity!

## "Concepts in Varroa Management" -- Randy Oliver

*By Amy Owen, owner of [Desert Hives LLC](#) and NMBKA vice-president*

After this presentation, I noticed that many more beekeepers were asking for my help with mite testing and varroa management. I have little doubt that at least some of this is due to Randy Oliver’s presentation at our recent summer conference.

I have watched Randy present a few times before, and he has a way of sharing information in a way that is sobering, matter of fact, but with a bit of levity. This is the second time I’ve seen him share a photo of a suffering dog covered in mites. This comparison effectively shows his audience what our bees are dealing with when colonies have high mite loads.

If we are to successfully and ethically keep bees, varroa must be managed. Interestingly, Randy admitted that bees would have most likely been mite resistant in six years if there would have been no synthetic chemical treatments when varroa came to South Africa. I think it’s important that we don’t view the issue of beekeeping in a time of varroa as a treatment vs. treatment free dichotomy. Randy seems to agree.

Treatment-free is the end goal (through the cultivation

of good genetics). Randy runs a breeding program in which nucs over threshold are pulled out of the program and treated. He said, “Zeros are heroes.” He strives to have mite resistant colonies that are gentle and productive. Thankfully, his percentage of colonies selected for breeding is growing. Selective breeding is done at the queen level, so allowing colonies to collapse is counterproductive.

While we await a time when bees can handle varroa themselves, we need to be continually monitoring mite levels and applying appropriate and varying treatments. Randy has spent much time and many resources to test and create a model that beekeepers can use to determine the population growth of varroa mites in a hive, and appropriate times and methods of treatment for different times of the year. You can find this model at [scientificbeekeeping.com/randys-varroa-model/](https://scientificbeekeeping.com/randys-varroa-model/). He even provides some tutorials on how to use the model.

Randy has great insight on different cultural, soft/organic and hard chemical methods of managing and treating varroa. I highly recommend watching this presentation

VARROA MANAGEMENT—CONT. NEXT PAGE



to gain a better understanding of these various methods of varroa management and treatment.

Randy emphasized that it is important to control varroa mites in the spring, and to continually keep numbers low. It is much easier to maintain low numbers of mites than to try to bring a high mite level back down below threshold. Randy allows for 1-2 mites in the spring, and 6 mites in the summer.

I learned some things that surprised me, and that I'd like to research further. For example, Randy believes that the mites that fall onto a screened bottom board are mites that have already died; therefore, this does nothing to reduce mite loads. I always assumed that mites that were groomed off of bees fell to the bottom and could not climb back up because they either got stuck to a sticky board, or could no longer come into contact with another bee.

Regarding my preferred form of treatment, formic acid, Randy likes to use one treatment, repeated at 10 days if there is hot weather. This is something I'd like to try here during our hot summers, when there is seldom a time when the weather permits this type of treatment (temperatures must be below 85 degrees Fahrenheit during treatment, especially during the first 3 days).

He uses one tablespoon of Dawn dish soap to a half gallon of water for his mite washes (he prefers this over a powdered sugar shake). I have already had the opportunity to try this, and it seems to work well. I was worried that the mites would get caught in the suds, but he mentioned that it's important to "swirl, not shake."

I must confess, we had a disagreement. From my reading I have understood that a reduction in the amount of pollen

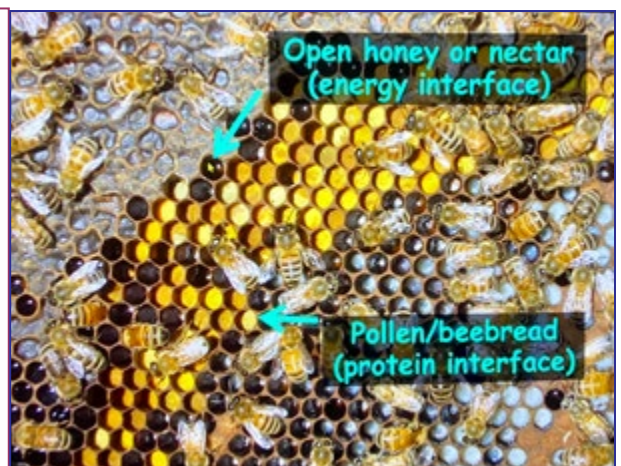
entering a hive prompts the development of winter bees. I have paid close attention to this, and do not feed my bees pollen in the late summer or fall because it is winter bees that carry a colony through winter. Physiologically, the bees "know" that with less protein coming in, the developing bees need to be producing more protein-rich brood food. Vitellogenin produced by the fat bodies in a worker bee is what enables the bees to do this; fat bodies are bigger in winter bees. Vitellogenin also enhances their immune system and increases their lifespan. Many beekeepers will feed bees pollen before winter bees are being produced, or in midwinter after they have been produced. Some, like me, will wait until spring or won't feed pollen at all.

Randy believes that the reduction in the amount of pollen entering a hive in the fall does not prompt the development of winter bees. He believes it is other environmental cues and that they happen to coincide with this time of year when pollen coming into the hive dwindles. I have seen studies that support this theory also. We exchanged a few emails regarding studies on this subject, and he even offered to meet with me via Zoom to discuss this topic. He was familiar with the research I referenced. Unfortunately, life can get a little hectic, and my mind has wandered away from the subject; however, I am looking forward to a paper he is writing on this topic (No wonder he was so passionate and willing to talk about this!).

I'd like to extend a big thanks to Randy for sharing his knowledge, expertise, and experiences with us. He has an immense passion for Scientific Beekeeping, and it's this passion that drives the research he does. This research benefits all of us, and the bees of course. It is great to see beekeepers come together to support Randy and this unbiased, crowd-funded research.



*Randy's slides:  
Left: Bees do their best to manage their mites, but mites can overwhelm a colony.  
Right: Honey, nectar, and pollen. Expect dwindling pollen collection in the fall.*





## "Delights of Earthly Gardens" -- Wes Brittenham

*By Allison Moore, Landscape Architect and NMBKA board member*



Everything we do is connected." That was one of the first phrases Wes Brittenham stated in his lecture at the New Mexico Beekeepers 2021 virtual summer conference. Wes has worn many hats in his lifetime from landscape designer to nursery manager to the current farm and land manager at

Los Poblanos Historic Inn & Organic Farm, but the one consistent occupation he seems to have always had is what he calls a "student of life." And he exemplified that with his talk and presentation that included inspiring images of gardens, flowers, birds, turtles, spiders, landscapes, and of course, bees.

After an amazing assortment of earlier speakers who discussed a wide range of beekeeping subjects and often in very in-depth and technical terms, Wes offered us the opportunity to take a deep breath and "get back to nature... where our hearts sing." He reminded us what nature has to offer: an evolving kaleidoscope of color, texture, light, sound, and taste, along with a feeling of awe that often leaves your mouth hanging wide open and the beginning stirrings of hope deep down.

As a fledgling beekeeper, I appreciated the reminder to not be overwhelmed by the horrific ways that mites will invade, multiply and weaken and kill the bees, or the crippling effects that pesticide and herbicide drift will have on my urban hives, and the feeling of gut-wrenching sadness from the unexpected discovery in the spring of an empty hive full of honey.

And I realized that I already know this. As a lifelong gardener for both myself and others, I understand and have witnessed the cycle of life in the garden and in the natural world that surrounds us. I celebrate the discovery of new buds on my apricot tree in the back yard and mourn the death of a beautiful pinon tree by bark beetle. I delight to see the roadrunner couple building a nest together in the cholla and then feel heartbroken to hear the mournful cry of the male roadrunner calling for his mate who was hit by a car. With each plant and animal death there is frustration and sadness and then acknowledgement and movement forward.

Each loss is a lesson to not only be a better gardener or beekeeper but also a better human. And by that I mean a better steward of the earth because, as Wes said, we are all connected--both indirectly and directly, and we all feel the effects of our thoughts and actions collectively.

After his talk I felt more inspired to take action, whether it is experimenting with the timing and type of mite treatments, talking to my neighbors and gardening clients about better alternatives to chemicals, or simply taking the time to shut off my phone, be quiet and listen to the bird song and bee hum in my garden. Nature is always there for us. Are we always there for Nature?

### A thousand thanks to the many generous donors to our online auction:

Christina Allday-Bondy, Anita Amstutz, Steve Black, Marty Carr, TJ Carr, Lynette Ewer, Kathy Grassel, Hays Honey and Apple Farm, Honey Hive Farms, Melanie Kirby, Lara Lovell, Mann Lake, Louis Mallette, Ryan Miller, Allison Moore, Amy Owen, Payne's Nurseries and Greenhouses, Bob Reneau, Holly Wright

**And a thousand thanks** to our wonderful polished speakers; to Steve Black for his flawless moderation of the webinar; and Ryan Miller and Bob Reneau for carrying out the many behind-the-scenes tasks and for keeping potential technical snafus at bay.

## Online Auction Exceeds Expectations!

*We assumed that because summer conferences are generally less well-attended that our auction would follow suit. But by the time Steve Black opened the auction for bidding, we were up to 43 items. From a simple hive tool to gift certificates to mated queens, packages, and a top bar hive, donors were generous. Below are photos of some of the proud new owners picking up their prized objects. Thanks all of you who donated and thank all winners for supporting your New Mexico Beekeepers Association.*



*Clockwise: Amy Owen scores bee art. Glenn Wagner with rare print of a smoker. Diana Mizusawa wins the top bar hive after heavy bidding. Marlene Brown with a full bee suit. Glenn Wagner scores one of Lynette Ewer's queens. Peter Phillips with his top feeder. Kim Reiten happy with her Ken Hays honey bears. Jan Ankerson with a Sierra Club Bee Aware t-shirt.*



# Bees as Seeds

By Melanie Kirby, Zia Queen Bees

There are 28 recognized subspecies of *Apis mellifera*.<sup>1</sup> They are all honey bees, yet they are distinct ecotypes. Ecotype signifies a population of a species (in this case, honey bees) which through environmental selection and isolation, are able to survive as a distinct group and which are comparable with a taxonomic subspecies.<sup>2</sup> And a subspecies is a biological classification which designates a category of a population from a particular geographic region which is genetically distinguishable from other such populations of the same species that is capable of successfully interbreeding with them where its range overlaps theirs.<sup>3</sup> In other words, subspecies are akin to races, or strains of a species. They can mate with each other to produce viable offspring that are of mixed genetics.

When bee subspecies mate with each other, their crosses can display a variety of behavior and traits based on the mixture of genetics. There is a process of hybridization and the result can lead to a cross-stock that outperforms both parents which is given the term *heterosis* or *hybrid vigor*.<sup>4</sup> The consequences of genetic bottle-necking in US honey bee stock lines has been brought to the attention of the industry by various researchers. There are less than 50 commercial queen producers nationwide. And even fewer actual queen breeders.

## What is Queen Breeding?

You may wonder, “Well, isn’t queen production the same as queen breeding?” The short answer is no, they are not the same. Yet, one does lead to the other and is affected by the other. To clarify:

*Queen Production* is the means and processes of rearing queens. It can be accomplished in several ways, such as through walk-away splitting or grafting of larvae. Production of queens can be done on a small to large scale

*Queen Breeding* on the other hand, is the art of selection. Selective breeding requires tedious attention to detail and the interest and know-how of following a regiment of selection. This regiment can include hygienic testing, topographical management and testing, and intentional genetic integration from particular stock lines.

Sue Cobey, a leading world bee geneticist, once told me that breeding bees cannot be accomplished in a few seasons, but rather, takes a career. And I agree with that statement wholeheartedly. Selection of breeding stock is an ongoing process. Especially if one is wanting to breed bees with particular traits which can be affected by the environment or which fluctuate over time.

An example of this is selecting for varroa-resistance. When conducting mite counts on hives, one can notice that the levels of varroa infestation can and will fluctuate. Is a one-time count sufficient for selection? Or should one take varroa counts on a regular basis and then take the average and breed queens off of the ones with the lowest averages?

Another example is with hygienic testing. Does hygienic testing equate with removal of varroa infested brood? Or does

it simply show that some bees can detect dead larvae that was frozen by liquid nitrogen and remove them? Is hygienic testing conclusive on the behavior and performance of a given hive? Is it enough to select breeding stock?

In these changing times, and shifting climates, with increasing varroa-vectored pathogens and the challenges of limited habitat, queen breeding AND queen production are both challenged.

So, how does the selection of breeders feed into the production of queens? It starts with a seed!

The genetic stories that have unfolded over millennia are magnificent! Every living organism has been sculpted by environmental surroundings and the passage of time. We tend to think that it is a nature vs. nurture situation but, it is actually that nature nurtures and tortures. The nurture aspects are composed of those conditions that encourage the cycles of life. The torture aspects are the stressors that encourage an organism to adapt and evolve. Nurture and torture are two sides of the same coin, so to speak.

In general, for honey bees, their genetic stories have been shaped by the variety of environments from which they originate. The various ecotypes that have evolved are distinct from each other yet are able to interbreed. These ecotypes are what we refer to as coming from Europe, Africa and Asia. Once they were imported into the U.S. on varying timelines, they began to hybridize and also adapt to their new environments.

The rise of industrialized agriculture and super-size farms for food production also had an effect on queen breeding and production here in the U.S. Queen breeding became a niche endeavor whereas queen production began to follow the steps of large-scale commercial applications. About 80% of all bees in the U.S. are produced in northern California and distributed across the nation. These bees do vary in their genetic stories and learning about queen producers’ practices and their stock origins is fascinating. I plan to follow up on this article with interviews from a variety of producers- from coast to coast and from border to border to share their distinct philosophies and dedication to the craft.

Many of these queen producers are high volume enterprises. They recognize the needs of beekeepers and are dedicated to supplying as many queens to their customers as possible. Their stock lines vary yet there are pockets of where they intersect each other by their proximity of mating yards. Drones and queens will fly a distance to mate. Drones will fly to DCAs (drone congregation areas).<sup>5</sup> These DCAs are located in the air and with newer technology, we are beginning to learn more about what sites are selected for DCAs and what they have in common.<sup>6</sup>

Large-scale queen producers tend to have enough on their plate with their keen attention to seasonal needs of commercial beekeepers and pollinators. Since queen breeding requires additional time, energy, and details, many of the queen producers rely on breeders who specialize in particular stock lines to supplement and integrate into their production



programs. An example of this is the queen breeding program run by Washington State University and the Sheppard Apis Molecular Lab.

Dr. Steve Sheppard, in collaboration with Sue Cobey and Dr. Brandon Hopkins (who are both also with WSU), began a quest in 2008 to visit “Old World” (European and Asian) countries to find distinct stock lines that could help to re-invigorate U.S. based American bee production. Their efforts have helped to bring in varroa-adapted stock lines from Slovenia, Georgia, Kyrgyzstan and some additional Italian- based stock. These stock lines include genetics from the Caucasus mountains (*Apis mellifera caucasica*) also referred to as Caucasian bees. Also included in their importations is stock from an apple-growing region near the Chinese border in Kyrgyzstan of a bee which Dr. Sheppard named, *Apis mellifera pomonella*.<sup>7</sup>

Due to a law from the 1920s, they are not able to import bees as the whole organism. This law went into effect at a time when tracheal mite was devastating England. At the time, this was called the “Isle of Wight” disease and it prompted the closing of importations of honey bees to the United States.<sup>8</sup> Because of this, Dr. Sheppard and his team have only been allowed to import semen collected from drones. This requires a timely visit where they visit various beekeepers and collect as much semen from select colonies and rush back to the states to then inseminate virgin queens.

Dr. Hopkins- building off of initial work by Dr. Megan Taylor (both former students of Dr. Sheppard) has been instrumental in developing a process of cryopreservation of honey bee semen which can be thawed later and used to inseminate queens.<sup>9</sup> This has helped to establish the American Honey Bee Germplasm Repository program which the USDA Animal Repository Program is overseeing in their underground liquid nitrogen tanks in Fort Collins, Colorado. This cryopreservation effort serves as a library of honey bee genetic stock and is now among the tanks with various other livestock breed germplasm, including bull, horse, swine, and poultry of varying strains.

Through backcrossing inseminations, they are able to reach 97% of the original stock line. This process is not only deliberate but requires a keen attention to detail and the ability to rear and incubate virgin queens, and to continue the collection of semen. The resulting fertile queens are prized *seeds* which are then distributed to queen breeders and queen producers around the nation for integration into their breeding and production programs. In this way, the Sheppard lab is able to share these seeds with those who can then produce more for distribution to beekeepers across the nation.

The analogy to seeds carries a lot of meaning. Not only in that a seed contains genetic information, and a toolkit for coping with varying stresses and environments, but also because it can be shared, grown and shared again and again. Honey bees in the U.S. are not only derived from these recently imported seeds, but initially were imported with immigrants to this brave land. Honey bees, like many of our ancestors, are immigrants to this country. They have learned to adapt and have become the backbone of American agriculture. They have been nurtured and tortured and continue to survive despite the

challenges.

My own queen breeding program based in the Rocky Mountains of northern New Mexico, has its roots in Michigan and Florida. Learning from queen producers and now queen breeders in several states across the country has really helped me to not only better understand the relationship between breeding and rearing, but how my apicultural practices can evolve to promote quality, and thus, longevity of my stock. I’m continuing to dedicate my apicultural career to the quest and breeding of quality stock lines. I’m a diehard bees-as-seeds saver and caster.

The moral of this story is that by remembering where our bees come from and tracing their roots, can help us to recognize what traits they carry within themselves and which ones we, as their keepers, can encourage to adapt and cope with our varying topographies, climates, habitats, and all the changes in between. We can support our bees by supporting each other. Talk with your queen producers and support their efforts to integrate quality stock lines. I will end this article with a little poetry to remind readers of the importance of genetics:

*Bees as Seeds: Within itself, every seed has a story, formed over millennia- with the power to nurture and adapt; and the magnificence to create life, food, and medicine for the world.*

(Originally published in *Bee Culture* August 2019 issue as Part II of “A Queen for All Seasons”)

About the Author: Melanie Kirby has been keeping bees professionally for 25 years and has worked with and learned from bees and their keepers from around the globe. She is a researcher, extension educator, writer, artist, and mother. Email: [melanie.kirby@fulbrightmail.org](mailto:melanie.kirby@fulbrightmail.org)

#### (Endnotes)

- 1 Sheppard, W.S. *Bee Culture*, Feb 2012, Vol.140(2), pp.24-27
- 2 <https://www.merriam-webster.com/dictionary/ecotype>
- 3 <https://www.merriam-webster.com/dictionary/subspecies>
- 4 Cale, G., & Gowen, J. (1956). Heterosis in the Honey Bee (*Apis Mellifera* L.). *Genetics*, 41(2), 292-303.
- 5 Zmarlicki, C., & Morse, R. (1963). Drone Congregation Areas. *Journal of Apicultural Research*, 2(1), 64-66.
- 6 Cramp, D. (2017). The use of an unmanned aerial vehicle (UAV) to investigate aspects of honey bee drone congregation areas (DCAs). *Journal of Apicultural Research*, 56(2), 172-174.
- 7 Sheppard, W., & Meixner, M. (2003). *Apis mellifera pomonella*, a new honey bee subspecies from Central Asia. *Apidologie*, 34(4), 367-375.
- 8 Imms, A. (1921). Isle of Wight Disease in Hive Bees. *Nature*, 107(2687), 283-284.
- 9 Taylor, M., Sheppard, Walter S., & Washington State University, degree granting institution. (2016). *Old world honey bee (Apis mellifera) populations: A genetic resource for U.S. honey bee breeding*. Pullman, Washington]: Washington State University.

# Embracing the Weeds

By Allison Moore, Landscape Architect and NMBKA board member



We are on the downside of summer going into fall but my garden is still going strong with Globemallow, Blue mist spirea, Amaranth and Sunflowers providing pollen and nectar to all types of bees and other pollinators. I had a busy summer post Covid and spent time visiting

family and friends and not as much time tending to my garden, including keeping ahead of the weeds.

One day I walked out and there were two enormous Mullein plants well established and sending up impressive stalks. Soon the large one topped 10 feet and was covered with small yellow flowers and lots of honey bees with colorful pollen pants. I was excited to see the Mullein as it as a beneficial plant not only for the garden but also for pollinators and humans. I happily watched its progress but many people including gardeners see it as invasive weed and a lot of money has been spent removing this plant from the natural landscape.

The other unexpected visitor was not just one but hundreds of Silver leaf Nightshade. I spent last summer pulling, digging, and swearing at this plant all over my back yard and thought I had removed most of it from my garden only to discover it popping up once again.

So be it, I thought ...life is too short to pull every single Nightshade plant. It's time to embrace the weeds whether they're warm and fuzzy ones like Mullein or thorny persistent ones like Nightshade. And shortly after my resolution, I discovered how much the Bumble bees and Sphinx moths love the Nightshade plant—buzzing around and feeding off the purple flowers. That settled it! I decided to incorporate both plants into my garden giving them each a place in the back yard where the cultivated garden meets the more wild and unrestrained environment.

This meeting of two different areas or ecosystems is

often called the “edge effect” and is one of the main principles found in the sustainable landscape design system called Permaculture. These overlapping areas are often the source of an increase in diversity of plant, animal and insects species. Heady stuff for a back yard gardener but applicable all the same. The edges in my garden are small compared to ones found in our national forests and wilderness areas but just as important for the wildlife that live in my neighborhood.

These edges tend to be where I have run out of steam and left the landscape as is, such as where the vegetable garden meets the compost bin or even in between flowering shrubs and wildflowers. The possibilities are endless and something to consider including in your own garden or landscape. Embracing the often perceived problem of a “weed” may be more effective than fighting it over the long run.

Here are some interesting facts about both Mullein and Silver Nightshade. Please note this is not an endorsement of the cultivation of either plant, just a different perspective on how to view the plant in your garden.

## Common Mullein, *Verbascum Thapsus*

Common mullein grows in compacted poor soil and is often found in neglected meadows and pasture lands, disturbed or vacant lots, forest openings and abandoned industrial areas. It has a deep tap root that helps to help break up the soil and then when the leaves die, the dead foliage adds nutrients the soil.

Mullein improves the surrounding soil, making it good enough for other plants to thrive, and then moves on and quits growing there, often reseeding itself nearby.

It is an herbaceous biennial which means that the first year it appears as a rosette of fuzzy silver green leaves that lay close to the ground. The second year the plant sends up huge flower spikes averaging 2 to 8 feet tall



Bees on Mullein flower head



## WEEDS FOR POLLINATORS—CONT. FROM PREVIOUS PAGE

depending on the sun exposure with many bright densely clustered yellow flowers. These flowers only open for one day and bloom in a spiral up the stalk a few at a time throughout the summer. Each individual flower opens before dawn and closes by mid-afternoon and attracts a wide variety of insects (bees, flies, butterflies and other insects). Flowers are also autogamous, so self-pollination occurs at the end of the day if the flowers were not crosspollinated.

Native to Europe, northern Africa and Asia, it was probably introduced to North America as a medicinal herb. The leaf and flower of the Mullein plant has been traditionally used for its many beneficial attributes since the time of Dioscorides over 2,000 years ago, and is still highly prized by many communities for its healing qualities.

### Silverleaf Nightshade, *Solanum elaeagnifolium*

Silverleaf nightshade is a perennial sub-shrub native to the American Southwest, southern states, Mexico, and South America. It's a member of the Solanaceae family and therefor related to tomatoes, potatoes, tomatillos,



*Mullein in the garden. Mullein can reach 8 ft high*

eggplant, and tobacco, as well as other nightshade plants such as tree tobacco, black nightshade, and hairy nightshade.

The lavender, star-shaped flowers with yellow centers are beautifully set off by the silvery foliage, and large patches of the plant in full bloom can be very striking. The stems are prickly and covered with fine spines and the fruits are yellow with green stripes, resemble small tomatoes and remain on the plant for months.

The plant is aggressive and all parts of the plant are considered poisonous, and in a few states is classified as a noxious weed. There is historical information indicating that the fruits were

often used as a curdling agent for milk to make cheese; however, I am not advocating that use and stress that all parts of the plant are toxic to humans.

Silverleaf Nightshade has deep roots and can regrow from small rhizome fragments which means that even if you think you pulled out the entire plant, there may still be a small piece of root left in the ground allowing the plant to regenerate.

Some wildlife such as deer and birds will eat the fruit and seeds, and the flowers are a nectar source for certain pollinators such as Bumble bees, Sphinx moths and Hawkeye moths.



*Silver Nightshade bloom*

#### Sources:

*Gaia's Garden: A Guide to Home-scale Permaculture*, Toby Hemenway, Chelsea Green Publishing

*Weeds of the West*, multiple authors published by The Western Society of Weed Science in cooperation with the Western United States Land Grant Universities Cooperative Extension Services

Lady Bird Johnson Wildflower Center website, [www.wildflower.org](http://www.wildflower.org)

Southwest Desert Flora Website, [www.southwestdesertflora.com](http://www.southwestdesertflora.com)

University of Wisconsin-Madison Extension Horticulture Program



## Clara de la Torre

August 15, 1973 - June 12, 2021

*By Bob Reneau, NMBKA treasurer and membership coordinator*

With a heavy heart we say goodbye to a dear friend and fellow beekeeper. I was extremely fortunate to have met Clara at the NMBKA Winter Conference in February 2020. Her ultra-present energy was captivating, and the stories of her countless adventures were enchanting.

Clara de la Torre was one of the most courageous and loving people that I have known and who made friends everywhere she would go. She was a beekeeper, wilderness firefighter, volunteer for Mother Teresa, world traveler to over 26 countries, professional boxer, intercontinental dual sport motorcyclist, ultra-marathon runner, writer, mentor, coach, sister and friend. She received a Bachelor's Degree in Sociology from Seattle University and had just completed her Double Master's Degree in Creative Writing from the Institute of American Indian Arts in May.

She was currently writing her professional boxing memoir and a science fiction screenplay.



Clara and her sister Rachel created an impressive bee sanctuary in La Cienega Valley over the past several years. After a black bear attack on their hives last year, Clara built an electric fence around the bees to protect them and was planning to construct an elevated platform where the bees would be safe.

Clara had an immense level



of empathy, care and respect and was an ambassador for all beings. Clara shared her bear experience with everyone in the [September 2020 newsletter](#) and was looking forward to volunteering as the news editor

on the NMBKA website.

The world is a better place because of the light that she brought and the example she shared. She is loved and will be missed by our family of beekeepers.

# The Continuing Saga of "Murder Hornets"

By Kathy Grassel, newsletter editor

**W**e've reported on this fear-inducing Asian giant hornet twice in our newsletter, Summer 2020 and Winter 2020, so I thought you would be interested in the latest developments.

Still no sighting of the dreaded murder hornet in New Mexico, and unlikely that we will, but staff at the Washington State Department of Agriculture just eradicated a ginormous Asian giant hornet nest, thanks to a resident who spotted one attacking a paper wasp nest in his yard and sent a picture to the department. Agents came and captured several hornets, and then affixed radio tags to three of them with a piece of kevlar thread. One eventually led them back to the nest. The nest was home to approximately 1,500 hornets containing nine layers of comb!!

That was in August. Now those same officials in Washington say they've destroyed a second nest of Asian giant hornets on September 11th and are preparing to take down a third! The nests have been found within a few miles of each other.



Photo: Karla Salp/WSDA

While New Mexico's climate appears to be unappealing to the Asian giant hornet, we still need to educate ourselves about the hornet, for now largely because people in New Mexico have been reporting what they suspect to be murder hornets when they aren't—probably mistaking them for the cicada killers and tarantula hawk wasps that are widespread in New Mexico—triggering unneeded investigations and causing fear and needless killing of these beneficial insects.

Here are a few numbers that I got from an Aug. 31<sup>st</sup> article by Jessica Kutz in *High Country News* ([www.hcn.org](http://www.hcn.org)) These numbers certainly impart a sense of the outsized attention these scary insects have garnered since the first sighting in 2019:

**1.75**

Average size, in inches, of an Asian giant hornet.

**774**

Number of traps set by the Washington State Department of Agriculture in 2021 as of Aug. 30.

**712**

Number of traps set by citizen scientists in 2021 as of Aug. 30.

**2**

Nests found in the United States, both in Washington, since the hornets were first discovered in North America in 2019.

**2,111**

Approximate number of reported sightings of Asian giant hornets in 2021.

**3**

Number of sightings verified to be Asian giant hornets in 2021.

**34**

Confirmed number of all-time sightings in Washington.

**200**

Approximate number of queens — which are especially meddlesome as they eventually leave and form new colonies — found in a nest in 2020.

**20,000,000**

Amount in dollars requested for the Murder Hornet Eradication Pilot Program in the federal stimulus package.

**170**

Price, in dollars, for the beekeeping suit used by WSDA agents in the eradication efforts.

**7,991**

Number of people in the official Asian giant hornet watch Facebook group (<https://www.facebook.com/groups/hornets/>).

## On the Lighter Side

My friend Susan Crow, besides being curious about “all things bee,” is culturally advanced in her knowledge of opera. When I told her about the various sounds that honey bees and their queens are known to make and what they mean, she honed in on the phenomenon of queen piping. Queens may pipe while still in their cells, and again when they emerge and are freely roaming about the colony. With more than one queen in the hive, the piping signals that a virgin is ready to fight for the honor of being Her Majesty. I sent Susan a YouTube example, which inspired this libretto for an imagined Piping Queen Opera. --*Kathy Grassel, editor*

# The Piping Queen: An Opera in G-sharp Minor

*By Susan Crow*

[https://youtu.be/utJP1N\\_S8lc](https://youtu.be/utJP1N_S8lc)

ACT III:



For the sake of her people, assembled at the base of the battlements, the queen (mezzo soprano) determines to sacrifice herself by plunging from the tower. “Never for Myself Alone,” her final aria of love and longing for peace, is sung brokenly over the increasing furor from the unseen crowd. As she leaps, the radiant full moon darkens to honey-colored.



The chorus enters leading the young princess (soprano) destined to replace her mother (“Hail to Our Chosen One”). Terrified, the princess sings “What Shall Now Befall Me,”

while three potential consorts (countertenors) surround the princess, bickering for primacy (“Not You, Me”). Dancers attired like waiters enter, carrying silver trays holding gelatin towers.

Suddenly, the moon begins dripping like honey, and the workers beyond the battlements join together for the “Humming Chorus.” Now reconciled to her fate, the princess steps forward to sing “Come Destiny.” Surmounting their enmities, the ensemble gathers to sing the finale: “Always the Hive Prevails.”

THE END

\*\*\*\*\*

There really is a Humming Chorus, in *Madame Butterfly*.



## Welcome Anita Feil, our new NMBKA Secretary!

Anita is a native New Mexican raised in the southern part of the state. She has been a “hobby” top bar beekeeper since 2009, growing from one hive to managing a small bee yard. As a volunteer for the City of Las Cruces, Anita removes bees that have taken up residence in utility water meters. Being a former elementary educator, she enjoys mentoring prospective beekeepers and teaching the top bar class for Paseo del Norte Beekeepers Association. Anita plays clarinet in the Mesilla Valley Concert Band and bassoon in New Horizons band. Welcome Anita!



## Become a Member of NMBKA

**J**oin the NMBKA Hive for \$30! Help support NMBKA by becoming a paid member. NMBKA is an all-volunteer not-for-profit organization, so all of your contributions are going toward supporting our programs including the Certified Beekeeper program and this newsletter. Annual dues are only \$30 for the family.

Membership includes admission to the Winter Conference, Summer Technical Conference and any other program. Plus it's the right thing to do to support beekeeping in New Mexico.

You can join or renew on our website [www.nmbeekeepers.org](http://www.nmbeekeepers.org). Or if you prefer to join or renew by mail, please request a membership form on the website, complete, and mail along with \$30 to:

NMBKA  
PO Box 7188  
Albuquerque, NM 87194

Thank you! We can't do it without you!

## Instagram!!

NMBKA recently set up an Instagram account. This is a fun way to connect beekeepers and share news, information, and resources. If you click on the 'Link Tree' in Instagram you will see an easy way to access websites belonging to various beekeeping groups across the state, and a direct link to information on NMBKA's beekeeping certification program.

NMBKA wishes to share beekeeping photos from across the state, or even relevant beekeeping information. If you have photos and information you would like to share, please send a photo, caption, and details of when and where the photo was taken to [nmbka\\_social\\_media@nmbeekeepers.org](mailto:nmbka_social_media@nmbeekeepers.org). We will do our best to feature your post on the NMBKA Instagram page.

**We hope you all enjoy!**