Kelley Beekeeping

SERVING THE BEEKEEPER SINCE 1924

ISSUE 61: SEPTEMBER 2015

Image courtesy of Kathryn Alexander Fine Art

IN THIS ISSUE

From the Queen's Court

by Melanie Kirby

This time of year has us getting ready for a loop—coming back full circle to preparing our hives for fall and winter months. As we careen around the last bit of summer into the full curve of autumn, my small farm is busy extracting honey, shifting smaller hives from the highlands back to the lowlands and getting our kiddos back to school. My daughter has entered first grade and our little tyke will be starting pre-school. Boy how time flies….I remember when they were with us in the apiary as infants, tucked into a netted playpen while we pulled queen cells and caught mated queens from nucs. I can only hope that at some point in their lives, they will consider making beekeeping a lifelong practice, whether as a side project or as a career. But we can only hope.

Actually, their father has often shared jokingly when folks share how wonderful it must be for them to grow up on a bee farm, "Are you kidding?! I wouldn't wish this on my worst enemy!" And sometimes, I agree with him, in a sarcastic sort of way. On the one hand, there is a sincere need to mentor and encourage and support the would-be beekeepers of tomorrow. And then on the other hand, there's the knowing of how much of it all depends on the very critical things that one cannot predict nor control, such as the weather and other environmental and monetary stresses.

Like farming, beekeeping as a profession has seen its numbers plummet. And more recently, we are experiencing the "New Agrarian Movement" — which is priding itself on getting the newer generations back into the fields and farms, working with the earth and becoming responsible stewards of our lands, air and waters. It is this movement that I feel on the cusp of. Having hosted an Ariel Intern from my alma mater St. John's College this summer, I have an innate desire to encourage the future farmers and beekeepers. For when I got started beekeeping over 19 years ago, there was no "movement" and there was no support, like there is now.

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Queen's Court *continued*

Ally Ingalls with her first graft.

There's support from the industry—inside and out, and from mentors—experienced and some not so experienced. There's more research and educational opportunities for those interested in working with pollinators and sustainable ag systems. And there's more interest from communities and organizations from around the nation and globe. Including artists- like Kathryn Alexander who shared one of her Tiny Heroes paintings for this month's cover shot (read a profile on Kathryn's bee inspired artwork in Bee Arts section). Who wouldn't want to become a beekeeper today?

ZQB's summer intern has returned back to college. Ally Ingalls will be entering her sophomore year at SJC in Santa Fe, NM (they have a sister campus in Annapolis, MD). Ally has been so observant and motivated to not only learn about basic beekeeping, but has also learned how to breed queens for longevity while sharing the delightful pursuit of beekeeping with her college buddies and visitors to our farm. We cannot thank her enough for all her hard work and dedication. Thank you Ally for making this summer—and more importantly mentoring, be so emotionally rewarding. We congratulate you on making it through your first professional bee season and for wanting to come back next season!

I take humble pride in knowing that when I got started in 1997, I had to go to an actual library and check out books on basic beekeeping, call local beekeepers and do the footwork to learn. But, I know that I had to learn the hard way as well—and now with the internet, it all seems so close at hand…or is it? I feel for the new beekeepers, having so many options for information, from books (still—thank goodness!) and from online media and club presence. There's so much to learn—and some of it is good and some of it—well some of it we may question.

How difficult it must be to try to discern which information to follow, which to avoid and from which sources?! I have a list of mentors- all located in different places across the states- who I look to call or email, or try to steal a few minutes of their time at conferences. I am so glad that they are receptive to sharing their experiences and to helping beekeepers figure out what might be the best management for them, their circumstances and their area. It is still people who make the difference….and so it is with the folks here at Kelley Beekeeping.

Jennifer Priddy is handling the sales these days for KB. She is hard at work coordinating orders

and attending conferences. Even going so far as to deliver orders to conference attendees (see Upcoming events to learn which states she'll be visiting). And me, well- I'm here in the southern Rocky Mountains- just so very glad to edit the newsletter and support the efforts of the KB team by gathering quality content for you- Kelley's esteemed readers and customers. I am in awe at how much KB does and offers- from manufacturing their own woodenware, to sponsoring this educational newsletter and making sure customers are satisfied.

And while I enjoy participating, I can't help but think of all the changes that the industry has gone through and how it will continue to evolve. We value your input, your ideas and concerns. All readers are invited to submit article ideas, stories, photos and questions. Even poems are encouraged to be submitted. Don't be shy- this newsletter is for you and we want to cover topics of interest that are pertinent and also inspirational. Because the truth is, we—and our bees—are all in this together, one season at a time.

This month we introduce Liz Walsh to our Q&A columns. Originally from Wisconsin, Liz is now a doctoral graduate student at the Texas A&M Rangel Bee Lab. She is currently studying miticides and their effects on queen health and longevity. She visited my small bee farm this past month and truly impressed me with her dedication and intelligence on honeybee husbandry. She will be joining our Q&A columnists Phill Remick and Dennis Brown. So send us your questions, and we'll forward them to our columnists so they can share their experiences and research.

And that is what it is all about—sharing. Whether ideas, experiences, suggestions, concerns or encouragement- we can share our passion for bee husbandry, from beginning with your first package or nucleus, to grafting queens and making wonderful products to share with family and friends or to sell for revenue. Kelley Beekeeping has all the products you could possibly need to keep your bees healthy, and you—the beekeeper, happy.

Let this month of seasonal transitional be a good one for your bees—reflect on the summer season, and strategize for the coming spring by prepping your hives well now in the fall and to strengthen them up for overwintering. It's like a game of chess, the more moves you can think of in advance and prepare for, the higher chances you have of protecting your queen!

Sweet September Salutations!
MK

Melanie has been keeping bees professionally for 19 years. Having started as U.S. Peace Corps Volunteer stationed in South America, then working for 3 commercial ops on the Big Island of Hawaii and in Florida, she has dedicated the past decade to establishing Zia Queenbees Farm & Field Institute in the southern Rocky Mountains. She will be travelling to Nicaragua and North Carolina this month to share sustainable beekeeping management strategies. She can be reached at Editor@KelleyBees.com

If you have a question you would like to share, email it to Editor@KelleyBees.com

A•Bee•Cs

Beginning Beekeeping

by Melanie Kirby

TOP BAR BEEKEEPING Seasonal Techniques

This month, as the Editor of Kelley Beekeeping, I would like to share some basic fall prep "tips" for top bar (horizontal hive design) beekeepers. Phill Remick and Stephen Repasky will share some info on respiration and robbing in our FAQ's and X,Y,Zzz's departments to keep you observant while Dennis Brown rejoins us in time for the holidays for next issues's Q & A columns.

I am often asked what are some fundamental concerns to tend to when prepping top bar hives for overwintering in temperate climates. Regardless of whether one uses a horizontal (top bar) or vertical (Langstroth, Warre) hive design, bees all need the ability to regulate interior hive temperature and humidity. Carbon Dioxide buildup can occur in any hive that doesn't have proper ventilation. And while research shows that certain levels of CO2 help to keep the bees in cluster-stasis (slow motion) mode for overwintering, too much can choke them out and they will asphyxiate and be suffocated without enough oxygen.

The ability to regulate temperature and humidity rests with the abode container and the environmental variables that affect the colony. In a vertical system, heat readily rises. When prepping Langs and Warre's for overwintering, ports can be made in the upper supers or the lid can be slightly cracked ajar to allow heat to escape so that condensation doesn't build up from bees respiring. If screened bottom boards are utilized, then ventilation can be increased more readily by the bees when needed.

However, in horizontal hive design systems, the ability of the interior air to "move" up and out is more stagnant because the depth of the hive isn't enough to allow the heat to rise and escape. Therefore, top bar hive stewards may want to consider drilling upper ventilation ports or remove a bar in the back and replace with screen (laying the top bar loosely back on top to allow some airflow but not allow predators or too much exposure to the elements. If upper ports are drilled, keeping them screened will allow the bees to either seal with propolis or to keep it open if they need the air flow while preventing robbing and mutli-entrance/exit points.

Another top bar topic for overwinter prep of horizontal top bar hives, is what to do with a smaller colony in a larger box. With vertical systems, the ability to add and remove space as the bees expand and recede in population is highly functional and beneficial. In a horizontal system though, the hive body is composed of one large cavity that the bees must regulate regardless

of population/size...unless...one installs a false wall. The installation of a false wall inside a larger cavity top bar hive will divide the interior hive space; and thus, the colony will not have to work as hard to regulate the temperature and humidity in a smaller cavity than in a larger one.

If there are two small top bar colonies, then they can be "condensed" into one larger cavity box that has a divider with entrances on opposite ends. It is better to go into winter with one strong colony vs. two weaker ones...but if a smaller colony has the necessary resources (stored honey in the comb) and sufficient population and ventilation, then putting two separate colonies in a single container may allow them to support each other through the dearth and cold while keeping them separate colonies.

And if all goes well, come spring- when the days have lengthened and the bees have initiated brood rearing and foraging, the false wall can be removed, and the bees can be allowed to expand to full capacity or if two hives in one box, can be separated and allowed to mature into the new season. These techniques can also be applied to vertical Lang and Warre hive designs as well. There are numerous techniques that can be learned and applied to both horizontal and vertical hive design systems—the key is to apply seasonally appropriate methods before it gets too cold!

For more info on top bar beekeeping, visit this webpage for Curtis Gentry's Small Scale Beekeeping Peace Corps manual which is available for free at http://www.beekeeping.com/articles/us/small_beekeeping/index.htm

and also check out Les Crowder's Natural Top Bar Beekeeping: Organic Practices for Honeybee Health
http://www.fortheloveofbees.com/topbar-beekeeping-book/

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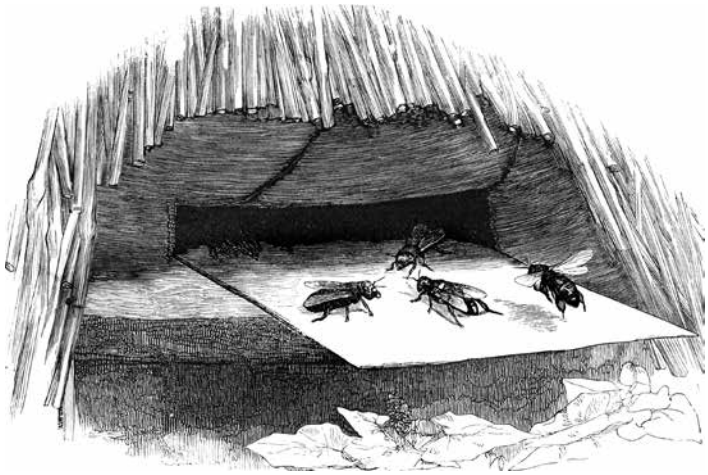

Just the FAQs

Questions & Answers

by Dennis Brown

Hi Dennis,
We're new beekeepers and purchased two hives from someone in our local beekeeping association After we learned a bit more, we realized that this particular beekeeper isn't as committed to natural methods as we are and he has used chemicals regularly for hive beetles and Varroa mites. At this point, one of the hives (which has become very weak) shows signs of beetles. We are getting a trap to put oil into and plan to dust with powdered sugar. Do you have any other ideas to help us try to save this hive?

Also, the other hive is very strong. In fact, we pulled out a feeder that the bees had built comb in not realizing we had to put a frame in its place while we cleaned it up and refilled it. In the meantime, they built brood comb into that space from the lid down into the hive. We are wondering if it is possible, after we treat for the beetles, to take this brood comb and place it into the weak hive to help it out.
Daniel Palmer

Hello Daniel,
If you have purchased bees from someone who has been treating their bees with chemicals, then you will have to treat them with chemicals as well. Those bees will not be hygienic enough to care for themselves and their immune system has been weakened by the chemicals. I highly recommend that you re-queen the hive with a hygienic queen when you buy bees from chemically treated stock. Most beetle traps do not work. The best solution for beetle control is to keep strong hives and don't provide the bees with more space than they can protect. Anytime you have a hive that has had chemicals placed inside it, you should rotate the combs out as soon as possible. The first combs to become empty in a hive will be the two outside combs. As they become empty, replace them with new comb and mark them. Using a tact on the top bar will help you identify the new comb you exchanged.

I don't recommend treating the hive with any chemicals. Most feeders provide good hiding places for the hive beetles so you should remove inside feeders as soon as you are finished with them. You should cut the burr comb out and add a proper frame in its place. The burr comb in that location will typically not contain any brood, so relocating it to another hive will not serve any good purpose. In my book "Beekeeping: A Personal Journey," I have included a chapter on chemical free beekeeping. I explain in that chapter how to care for your hives without any chemical use and how to minimize beetle/varroa populations.

Response: Finally, we have located a natural beekeeper in our area and will be acquiring additional hives in the future from him (He converted to natural methods three years ago, raises his own queens, etc.). Do you recommend placing the natural hives well away from the ones that we are transitioning from commercial methods, so there is less risk of cross contamination?

The only times you should worry about cross contamination is when you interchange equipment or when a hive gets weak and cannot defend itself from robber bees. Then the problem spreads to other hives. Remember to rotate those combs even from the NOW natural beekeeper. He may still have the same combs inside his hives from when he used chemicals. You may be the unlucky recipient of those frames.

Enjoy your bees!
Dennis Brown

Dennis Brown is the author of "Beekeeping: A Personal Journey" and "Beekeeping: Questions and Answers." Contact Dennis at www.lonestarfarms.net.

X•Y•Zs

Advanced Beekeeping

by Liz Walsh

Hello, I am Liz Walsh, a graduate student at Texas A&M University. Melanie has generously offered me the opportunity to write for the newsletter, so I look forward to interacting with readers and discussing ideas with you. This is an exciting time to be part of the beekeeping community and an interesting time to be part of the beekeeping industry.

I have been a part of the beekeeping community for almost a decade, first as a hobbyist who worked for a beekeeping supply company and now as a researcher. I am pursuing my Ph.D with work that I am doing in Dr. Rangel's Honey Bee Lab where I study the effects of miticides in the queen rearing environment. Although I'm biased, I think that this is really interesting work that is important to both the beekeeping industry and the beekeeping community.

My beekeeping career began in rural Wisconsin, where the state honey queen at the time, Becky Mehringer, talked me into assisting her in her beekeeping. I got absolutely hooked and I've been well and truly addicted to beekeeping ever since. I then began my own beekeeping, got an after school job at the area beekeeping supply store, and eventually had an apiary large enough to pay for a large chunk of my undergraduate tuition. I was lucky enough to get involved in a summer research program at Texas A&M with Dr. Rangel in the summer of my junior year. My undergraduate advisor and Dr. Rangel convinced me that it was possible to pursue a graduate degree with honey bee research, so I moved from Wisconsin to Texas in the summer of 2014. Beekeeping in Wisconsin and beekeeping in Texas are two very different things, so please keep in mind that any questions I attempt to address have been formed due to this background.

My work centers around known chemical contaminates in honey bee hives, most of which we as a beekeepers introduce to the hive, and the impact these contaminates have on honey bee queens. Most of the chemicals I am examining are the active ingredients of miticides, but some are agrochemicals not used in the beekeeping industry. While I think that very few areas of the United States are able to support successful chemical-free beekeeping, it is important that we—as beekeepers—keep in mind that the decisions we make now regarding chemical treatments will impact us a decade from now, as the decisions we made a decade ago (and two decades ago) continue to impact us today in the form of contaminated comb and contaminated foundation. As such, I'm a very big advocate of rotating your comb as often as you can afford to.

If you are interested in the Rangel Honey Bee Lab, then I encourage you to "like" our Facebook page. The page is called "Texas A&M University Apiculture" and I can be contacted through email

at walshe@tamu.edu. I would love to hear from you, although I do request that you put "Kelly Newsletter" or something similar in the email title.

Best wishes and good luck with the end of honey harvesting!
Liz

Liz Walsh picking blackberries at the NMSU Sustainable Ag Center.

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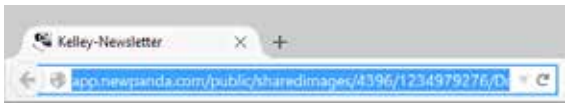

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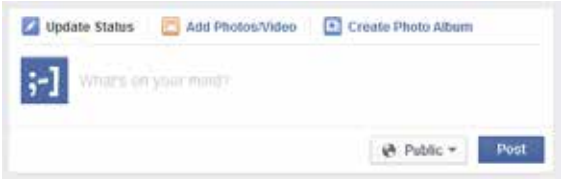


3 Press Post and share the newsletter with your beekeeping friends. Thanks for sharing!

Bee Science

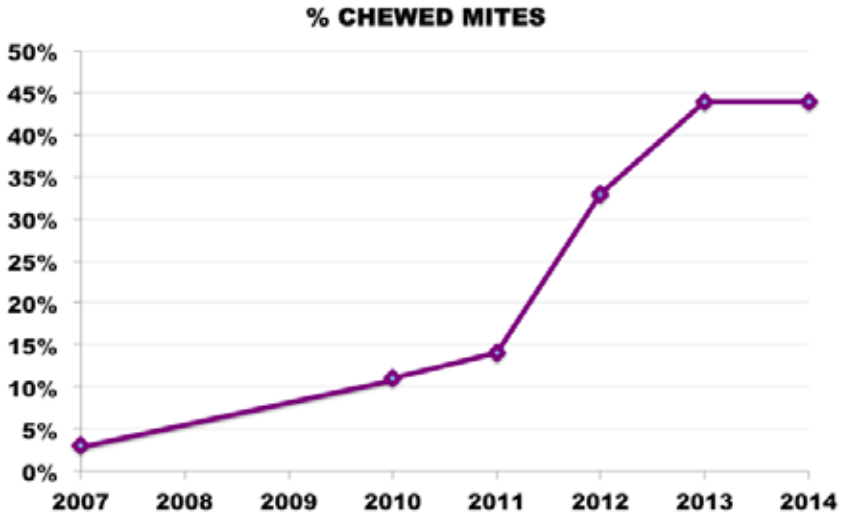
ABRC Proceedings, Part III

Abstracts from January 2015

This month, we run the third and final installment of the American Bee Research Conference (ABRC) abstract proceedings. The ABRC occurred in early January 2015 in Arizona. There are interesting research efforts being conducted around the nation. Keeping oneself informed and taking the next step to apply research findings in the field can help build the bridge between academia and the broader apiaries beekeepers establish and maintain. It does take a community to keep bees healthy and productive!

16. Hunt, G.J.[a], J.M. Tsuruda[b], J.K. Given[a] & G.K. Andino[a] – BREEDING FOR INCREASED MITE GROOMING BEHAVIOR IN HONEY BEES AS A MEANS OF REDUCING VARROA MITE POPULATIONS. [a]Purdue University, 901 W. State St., West Lafayette IN 47907, [b]Cooperative Extension and Public Service & Agriculture, Clemson University, Clemson, SC.

Several studies have indicated that grooming behavior of honey bees in response to *Varroa destructor* mites correlates with the propensity of bees to bite mites (Arechavaleta-Velasco & Guzmán-Novoa 2001; Andino & Hunt 2011; Guzmán-Novoa et al. 2012). A breeding program was conducted to select for the colony-level trait, the proportion of chewed Varroa mites retrieved from sampling sheets placed underneath hives. A fairly robust response to selection was observed, resulting in about 44% chewed mites for the past two years (see Figure). The proportion of chewed mites was inversely correlated with the number of mites on the sampling sheets, suggesting that this trait is effective for reducing mite populations. In the previous year the proportion of chewed mites was only nominally correlated with reduced levels of mites on adult bees collected with alcohol washes.



17. Johnson, R.M., Riusech, N., Wransky, M. – EFFECT OF "BEE-SAFE" INSECTICIDES ON WORKER DEVELOPMENT
Department of Entomology, The Ohio State University, Wooster, OH

18. Li-Byarlay, H.[a], Huang, M.[b], Simone-Finstrom, M.[a], Strand, M.[c], Tarpy, D.R.[a], & Rueppell, O.[d] THE PHYSIOLOGICAL EFFECTS OF OXIDATIVE STRESS IN HONEY BEE DRONES
[a]Department of Entomology, North Carolina State University, 100 Derieux Place, Raleigh, NC, [b]Eurofins Agroscience, 8909 Atkins Road Mebane, NC, [c]Life Sciences Division, U.S. Army Research Office, Research Triangle Park, NC, [d]Department of Biology, University of North Carolina at Greensboro, 321 McIver Street, Greensboro, NC

Accumulation of free radicals or reactive oxygen species in the cells leads to oxidative stress, and potential cell death (Farooqui & Farooqui, 2012, *Oxidative stress in vertebrates and invertebrates: molecular aspects on cell signaling*, *Wiley-Blackwell)*. Oxidative stress is related to aging and physiology (Finkel & Holbrook, 2000, *Nature 408*, 239-247). Honey bees are the most important managed pollinator in agriculture but the long term survival of honey bees is seriously threatened (Evans *et al., 2009, PLOS ONE 4:e6481*). Certain synthetic pesticides and herbicides are thought to increase oxidative stress in honeybees (Abdollahi *et al, 2004, Med Sci Monit 10: RA141-147*). More work is needed to determine the impact of increased oxidative stress on honey bee health and survival (Seehuus *et al, 2006, PNAS 103: 962–967*). We sought to determine the impact of elevated oxidative stress on honey bee drones. We induced oxidative stress with paraquat, and determined that paraquat treated drones exhibit a lower rate of survival, that drones vary in their resistance to paraquat, and that oxidative stress reflected on the level of lipid peroxidation correlates with resistance to paraquat. This study provides new insights into the variability of resistance to oxidative stress.

19. Meikle, W.G.[a], Holst, N.[b], and Weiss, M.[a] – EXPLORING CONTINUOUS TEMPERATURE AND WEIGHT DATA
[a]Carl Hayden Bee Research Center, USDA-ARS, 2000 East Allen Road, Tucson, AZ 85719
[b]Dept. of Agroecology, Aarhus University, Denmark

Continuous monitoring of honey bee hive weight and internal temperature provide useful data on colony growth and activity. Hive temperature is a function of the hive internal temperature, caused by bees, and the ambient external temperature. We examined hive temperature as a running average and within-day data. Amplitudes of sine curves fit to the data were found closely related to the amount of brood. Continuous weight data was treated the same way. Running average weight data provides information on general trends in colony growth and food availability, while the amplitudes of sine curves fit to the weight data measure hive activity and are correlated with the adult bee mass. Weight data can also be used to detect the acute loss of foragers due to a bee kill or to swarming. Raw within-day data have also been found rich in information on daily cycles of water loss, respiration and forager departures. This information on colony-level health and activity can be used as response variables in manipulative field experiments.

20. Niño, E. L.[a,b], Wolfner, M.[c], Silverman, C.[d], and Grozinger, C.[a] – BREEDING HONEY BEES: FROM EVOLUTIONARY AND FUNCTIONAL GENOMICS TO SOCIOLOGY
[a]Dept. of Entomology, Center for Pollinator Research, The Pennsylvania State University, University Park, PA, [b]Current address: Dept. of Entomology and Nematology, University of California, Davis, Davis, CA, [c]Dept. of Molecular Biology and Genetics, Cornell University, Ithaca, NY, [d]Department of History and Politics, Drexel University, Philadelphia, PA
Email: elnino@ucdavis.edu

Honey bees are exposed to many maladies including pests and pathogens. Use of chemicals to control these further deteriorates honey bee health. Breeding for resistance to pests and pathogens offers a more long-term, ecologically sound and sustainable solution. To create successful breeding programs, it is critical to understand what regulates behavioral, physiological, and transcriptional post-mating changes in queens. Previous research shows that seminal fluid components (SFC) and insemination volume trigger and maintain particular aspects of queen post-mating changes. Our preliminary work shows that components of honey bee seminal fluid and not sperm cause inhibition of sexual receptivity in queens. Seminal fluid components also seem to be involved in regulation of queen pheromone production, however, they do not seem to regulate ovary activation which is more likely to be triggered by insemination volume. In addition, we conducted a state-wide survey of registered Pennsylvania beekeepers to better understand current queen rearing and bee breeding practices and to determine what might be the social obstacles to developing successful bee breeding programs. Our data will be used to inform an ongoing effort of creating local/regional breeding programs starting with the Pennsylvania Queen Breeding Program.

21. Nolan, B. and Delaplane, K. - EFFECTS OF COMPARATIVE QUEEN POLYANDRY ON COLONY STRENGTH, DRIFT, AND VARROA COUNTS - Dept of Entomology, University of Georgia, Athens, GA

22. Palmer, J.H., Webster, T.C., & Matisoff, M. – LOCALIZATION OF NOSEMA CERANAE INFECTION WITHIN WORKER HONEY BEES
College of Agriculture, Food Science and Sustainable Systems, Kentucky State University, Frankfort KY, 40601 USA

Nosema ceranae infects the epithelial cells of the honey bee midgut. In this study we looked for presence of *N. ceranae* DNA in other organs and body parts of worker honey bees. We examined worker bees that had been removed from their hive when healthy, and then inoculated with *N. ceranae* spores. These bees were caged and kept in an incubator at 32 C for 30 days following inoculation. During this period they were fed 50% sucrose syrup *ad libitum.* After this incubation period, we removed the heads, thoraces, and abdomens (including the crop, midgut, and rectum) from five sample groups, and checked the samples for the presence of *N. ceranae* DNA using qPCR. *N. ceranae* DNA was present in the midgut and rectum; CT values for the midgut samples ranged from 29 and 31, and CT values for the rectum samples ranged from 34 and 38. There were no signs of target DNA in the head, thorax, and crop samples. Our results indicate that *N. ceranae* is likely spread via fecal matter and not via trophallaxis. Additional studies must be undertaken on a larger population to validate these findings.

23. Rangel, J.[a], Baum, K.[b], Coulson, R.N.[c], Johnston, S.C.[a], and Traver, B.E.[d] – PREVALENCE OF NOSEMA SPECIES IN A FERAL HONEY BEE POPULATION: A 20-YEAR SURVEY
[a]Department of Entomology, Texas A&M University, 2475 TAMU, College Station, Texas 77843-2475, [b]Department of Zoology, Oklahoma State University, 501 Life Sciences West, Stillwater, Oklahoma 74078, [c]Knowledge Engineering Laboratory, Department of Entomology, Texas A&M University, College Station, Texas 77843-2475, [d]Department of Biology, Penn State Schuylkill, 200 University Drive, Schuylkill Haven, PA 17972

24. Rogers, D. and Huntzinger, K. – FIELD TESTING VARROACIDES TO DETERMINE EFFICACY AGAINST VARROA DESTRUCTOR IN NORTH AMERICA
Bayer CropScience, Bayer Bee Care Center, 2 T.W. Alexander Drive, Research Triangle Park, NC 27709

25. Schwarz, R.S.[a], Bauchan, G.R.[b], Murphy, C.A.[b], Ravoet, J[c], de Graaf, D.C.[c], and Evans, J.D.[a] – NEW TO SCIENCE, GLOBALLY ABUNDANT, AND NOT WHAT WE THOUGHT: CHARACTERIZATION OF A NEW TRYPANOSOMATIDAE PARASITE IN APIS MELLIFERA
[a]Bee Research Laboratory, Beltsville Agricultural Research Center – East, Bldg. 306, U.S. Department of Agriculture, 10300 Baltimore Ave., Beltsville, Maryland 20705, U.S.A.
[b]Electron and Confocal Microscopy Unit, Beltsville Agricultural Research Center – West, Bldg. 012, U.S. Department of Agriculture, 10300 Baltimore Ave., Beltsville, Maryland 20705, U.S.A.
[c]Laboratory of Zoophysiology, Faculty of Science, Ghent University, Ghent, Belgium

Trypanosomatids are increasingly recognized as prevalent in European honey bees (*Apis mellifera*) and by default are attributed to one recognized species, *Crithidia mellificae* Langridge and McGhee, 1967. We provide reference genetic and ultrastructural data for type isolates of *C. mellificae* (ATCC 30254 and 30862) in comparison with two recent isolates from *A. mellifera* (BRL and SF). Phylogenetics unambiguously identify strains BRL/SF as a novel taxonomic unit distinct from *C. mellificae* strains 30254/30862 and assign all four strains as lineages of a novel clade within the subfamily Leishmaniinae. In vivo analyses show strains BRL/SF preferably colonize the hindgut, lining the lumen as adherent spheroids in a manner identical to previous descriptions from *C. mellificae*. Microscopy images show motile forms of *C. mellificae* are distinct from strains BRL/SF. We propose the binomial *Lotmaria passim* n. gen., n. sp. for this previously undescribed taxa. Analyses of new and previously accessioned genetic data show C. mellificae is still extant in bee populations, however *L. passim* n. gen., n. sp. is currently the predominant trypanosomatid in *A. mellifera* globally. Our findings require that previous reports of *C. mellificae* be reconsidered and that subsequent trypanosomatid species designations from Hymenoptera provide genetic support.

26. Skinner, J., Moore, P., Wilson, M. – USING eXTENSION BEE HEALTH TO EXPAND KNOWLEDGE AND SHOWCASE YOUR RESEARCH PROGRAMS
Department of Entomology and Plant Pathology, University of Tennessee, Knoxville, TN

27. Steinhauer, N.A.[a], Saegerman, C.[b], Rennich, K.[a], Wilson, M.E.[c] & vanEngelsdorp, D.[a] –
MANAGEMENT PRACTICES THAT IMPROVE HONEY BEE COLONY SURVIVORSHIP IN THE US: RESULTS FROM A NATIONAL SURVEY
[a]Department of Entomology, University of Maryland, College Park, MD 20742 USA.
[b]Faculty of Veterinary Medicine, Université de Liège, 4000 Liège, BELGIUM.
[c]Department of Entomology and Plant Pathology, University of Tennessee, Knoxville, TN 37996 USA.
***Corresponding author: Email: nsteinha@umd.edu**

Over the past 7 years, an average of one in three US overwintering colonies died (vanEngelsdorp et al., 2007 *Am Bee J* 147(7): 599–603, 2008 *PLosONE* 3(12), 2010 *J.Apic.Res*. 49(1): 7–14, 2011 *J.Apic.Res*.50(1): 1–10 and 2012 *J.Apic.Res*. 51(1): 115–124; Spleen et al., 2013 *J.Apic.Res*. 52(2): 44–53; Steinhauer et al., 2014 *J.Apic.Res*. 53(1): 1–18). The losses suffered by beekeepers have not been consistent: some beekeepers consistently loose more colonies than others. This suggests that more successful beekeepers (defined as those that loose fewer numbers of bees) either manage their colonies more effectively or run operations in areas that are more conducive to colony survivorship.

In attempt to identify management practices that resulted in the lowest mortality rates, we conducted an observational cross-sectional study design using retrospective surveys to record losses and management practices over the last 4 years.

We used an innovative epidemiological approach to develop an expert-based model that ranks applied management practices in US beekeeping in order to identify what practices reduce colony losses the most. Based on the most complete year of the survey (2013-2014), we subjected our theoretical model to sensitivity analyses in order to develop a regional and operational size specific minimal adequate model (e.g. "best management practices") which consider management factors such as varroa control methods, queen and comb management, and colony feeding regimes. It is hoped that the dissemination adoption of these findings will reduce annual rates of unsustainably high colony mortality.

28. Villa, J.[a], Danka, R.[a], Harris, J.[b] – SELECTING HONEY BEES FOR WORKER BROOD THAT REDUCES THE REPRODUCTION OF VARROA DESTRUCTOR
[a]USDA, ARS Honey-Bee Breeding, Genetics & Physiology Laboratory, Baton Rouge, LA.
[b]Biochemistry, Molecular Biology, Entomology, & Plant Pathology, Mississippi State, MS

29. Wagoner, K.M., Rueppell, O. - EFFECTS OF STEEL FOUNDATION WIRE ON CHEMICAL CONTENT AND HYGIENIC REMOVAL OF APIS MELLIFERA BROOD
Department of Biology, University of North Carolina at Greensboro.
Email: kmwagone@uncg.edu

Recent honey bee (*Apis mellifera*) declines in the United States are primarily attributed to the individual and synergistic effects of several stressors including the introduction and spread of new parasites and associated pathogens, reduced genetic diversity, and environmental pressures such as agrochemical exposure and mismanagement of domestic hives. Despite many efforts to address these stressors, loss of honeybee colonies especially over winter continues to be high. Honeybees may be especially susceptible to stress during development, as evidenced by brood sensitivity to poor nutrition, pesticides and trace metals. Recent research indicates that honey and honeybees are often contaminated with trace metals, some of which are associated with food resources. However, in some cases metal contamination may be coming from within the hive itself. After observing brood discoloration and several empty cells in the vicinity of the steel wire stabilizers present in wax foundation, we hypothesized that steel wires significantly affect honeybee brood health. More specifically, we predicted that brood in cells overlapping wires were 1) ingesting or otherwise incorporating metals from the wires into their tissue and 2) being removed at a higher rate than brood in cells not overlapping wires. To test this hypothesis we quantified the elemental content and measured the removal rates of brood developing in cells along the foundation wires and along control cells adjacent to the cells that contained wire. We found suggestive evidence that brood collected from cells along the wires contained more iron than control brood ($F=2.3$, d.f.=1,8, $p=0.08$). We also found evidence that brood along the wire was removed at a significantly higher rate than control brood ($2=675$ df=1 $p<0.001$). Here we identify a harmful practice common to modern beekeeping, which can be easily avoided to increase hive population size and, perhaps, improve overwintering success.

30. Webster, T. C., Matisoff, M.A., & Palmer, J.H. – STIMULI AFFFECTING THE GERMINATION OF NOSEMA SPORES - College of Agriculture, Food Science and Sustainable Systems, Kentucky State University, Frankfort KY, 40601 USA

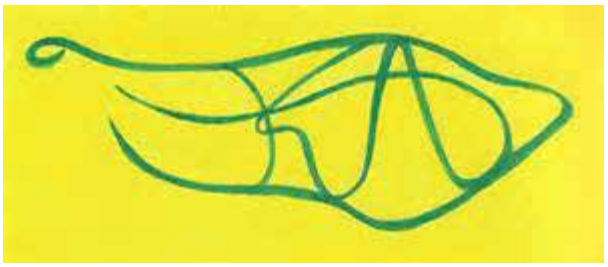
An understanding of the stimuli for the germination of *Nosema* spores in the honey bee midgut may lead to improved methods of control. Possibly, a treatment could inhibit spore germination within the bee or spores might be stimulated to germinate before they were consumed by bees, rendering them harmless. Such a treatment is difficult to develop because germination media for other Microsporidia vary widely, with no common theme (Weiss, L. M. and J. J. Becnel 2014 Microsporidia: Pathogens of Opportunity. Wiley Blackwell pub.).

We found that a mix of dilute Triton X, a surfactant, and a buffer consisting of 10mM MgCO3 and 10mM CaCl2 was effective at germinating both *N. ceranae* and *N. apis* spores on microscope slides at room temperature. However Triton X alone did not provide much spore germination. Similarly, the MgCO3 / CaCl2 buffer alone did not cause significant germination. Apparently, a synergistic effect between these two substances is effective.

31. Winston, M. – BEE TIME: LESSONS FROM THE HIVE
Centre for Dialogue, Simon Fraser University, Vancouver, B.C.

Bee Arts

Kathryn Alexander Fine Art



In her childhood rural setting near Ithaca, New York, Kathryn Alexander relied on her imagination to entertain herself, and the seed of her artistic future was planted. She was exposed to art immediately by her mother, who has an extensive art background and now lives and works in Santa Fe, New Mexico as a woodcarver. Her early college education started at a community college in Upstate New York, but her undying need to create art led her eventually to Santa Fe, New Mexico, where she would earn her Bachelor's in Fine Art degree from the Institute of American Indian Arts and Culture.

Kathryn became fascinated with bees when a shoulder injury caused her to pause her painting in anticipation of surgery. A friend of hers, who so happened to be a beekeeper suggested that Kathryn consider apitherapy. With the help of bee venom, Kathryn has been able to avoid surgery. She was so inspired by the awesome "littleness" of the bees—as compared to the massiveness of other creatures in size; yet so incredibly capable—that she has painted a series of portraits of bees. Her series entitled, Tiny Heroes, was first exhibited at the Western Apicultural Society of North America's Santa Fe Conference back in the autumn of 2013.

Kathryn has been in select Santa Fe galleries and numerous juried art shows, including exclusive membership with Santa Fe Society of Artists and the Santa Fe Artist's Market. Her love of color, detail, and a unique ability to capture individual expression have been appreciated by those who have either purchased her work through galleries and shows or privately commissioned her to paint a wide range of beloved pets.

Her newest acrylic paintings employ a greater variety of mediums and have a more gestural quality than her earlier work (which was more literal). She expresses the movement and complexity of various animals by building up numerous layers of textures, opaque and translucent colors in thick pastes, thin glazes, and gel mediums. Alternating between fine lines and broad strokes, she strategically allows the viewer to mentally fill in some of the details, resulting in a more mysterious and vibrant visual experience.

Kathryn is looking forward to an exciting new season of shows, and is always open to new ideas in the limitless realm of possibilities of how her unique artistic expression can benefit animals and humankind everywhere. View more of her vibrant artwork on her website at www.kathrynalexanderfineart.com

Kathryn Alexander painting.

Our Planet in Balance: Bees, Fungi and Man

The Center for Honeybee Research welcomes you for a one day special event on September 26, 2015 in the Charles Beale Auditorium at the Haywood Community College in Clyde, North Carolina to examine ecological issues facing our Planet.

While our food supply is threatened by Pollinator decline, consequences of accelerating widespread chemical applications may not become evident in time to prevent adverse repercussions. Can we expect to engineer 'fixes' along the way, or is it possible to discover solutions in Nature? What affects honeybees affects us all.

The Center is proud to bring these five distinguished luminaries to Western North Carolina:

Paul Stamets joins us to talk about myco-remediation and his recent findings about bees. He is perhaps the most recognized mushroom guru on the planet and his use of fungi to decompose hazardous waste products is an example of Nature as partner in restoring balance. He has recently been working with mushroom extracts capable of reducing viral loads in honeybee colonies.

M**elanie Kirby** is the current Editor of the Kelley Beekeeping monthly online newsletter - which boasts over 40,000 subscribers. She is the co-founder of Zia Queenbees Farm & Field Institute in Truchas, NM (elev. 8300 ft.) in the southern Rocky Mountains and her passion is the search for resilient and adaptable honeybee genetics. She and partner, Mark Spitzig, collect and select stock resistant to both diseases and pests. She is keen to promote and participate in consilience based research (multi-disciplinary) and strives to help bridge the gap between the field and academia and vice versa.

Dr. Don Huber is Emeritus Professor of Plant Pathology at Purdue University. He has been revealing alarming facts and trends about the World's most ubiquitous herbicide. Application of Glyphosate (aka Round-Up) has increased a thousand-fold since the year 2000 and is absorbed in every tissue of GMO food we eat. Is this 'harmless' formulation actually a wolf in sheep's clothing?

Dr. Jay Evans is one of the most prolific and respected experts in the field of genetics. He is currently Director of the USDA National Honeybee Laboratory in Beltsville, Md. and his interest is the expression of traits - how certain genes are 'turned on' or 'off' in response to environmental conditions. Beltsville is the primary lab testing viral load in honeybees.

Dr. Steve Sheppard is Professor and Department Chair of Entomology at Washington State University. He has been collecting and importing frozen bee semen to expand the genetic pool of our American honeybees for several years. In June 2015 Steve travels to Kazakhstan looking for material from a race of bees which may be ancestors to all our Western Honeybees. Dr. Sheppard and Sue Cobey assess and release this new material to bee breeders. Dr. Shepard has been collaborating with Paul Stamets in testing mushroom extracts in the elimination of honeybee viruses.

Date: Saturday September 26, 2015 Time: 9:00 AM - 5:00 PM
Place: Charles Beale Auditorium, Haywood Community College, Clyde NC
Cost: $55 per person (2 for $100) pre-registered, $75 at door if available
Email: carlchesick@honeybeeresearch.org Tel: (828) 779-7047

The Center for Honeybee Research is an IRS approved 501-C (3) charitable organization based in Asheville, NC, USA. This is an educational Event open to the general public. Ticket prices are applied to the costs of organizing, promoting, and producing this Event.

Center for Honeybee Research Presents
the 5th Annual International

DEADLINE OCTOBER 15, 2015

Don't Delay - Ship Your Entry Now

5th Annual International

2015 Black Jar Honey Tasting Contest

Honey. The concentrated essence of plants collected by thousands of individual bees. Each a blend of the unique flora within foraging distance. Different within each colony in a single place - indeed, different within cells of a single comb. Different throughout the progressing season and noticeably different year to year.

Think of the variety of plants within an area. Consider how they respond to sunlight and rain, temperature and humidity. Even within a small distance microcosms produce subtle changes. The mineral content of every square meter of the earth varies due to eons of weathering and seismic shift - differences reflected in honey.

Taste. A Sense all humans share. Wikipedia says an average of 3,000-10,000 taste receptors dot the human tongue - but they are marvelously imprecise in what they convey. We all more or less agree what is salty, bitter or sweet - but how can certain individuals reject a fruit as too bitter when others find them delicious?

Perhaps it is less about the chemical receptors on our tongues than it is how our brains interpret the sensations it receives? Ask people to rank what tastes best to them - and their answers will likely contradict the opinion of others sampling the same thing.

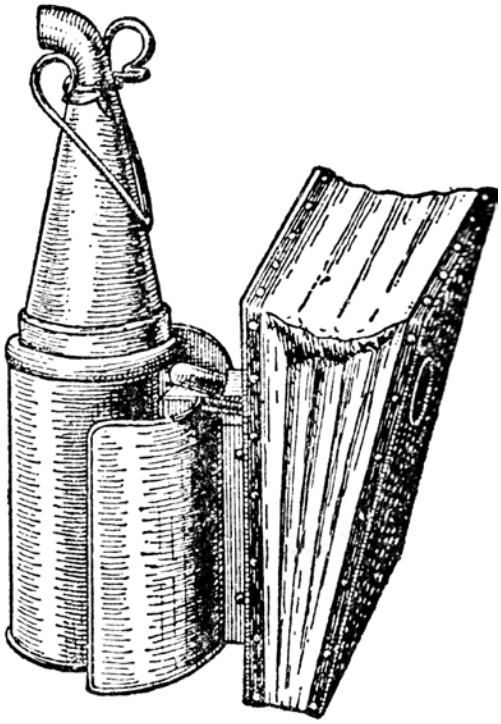
There exist in this World bees, people, and plants wonderfully exotic to each other. The goal of the **Black Jar Honey Tasting Contest** is to bring them together to share this intersection of Honey with Taste. The Center welcomes the prospect of 'discovering' varietals and blends from all parts of the Globe.

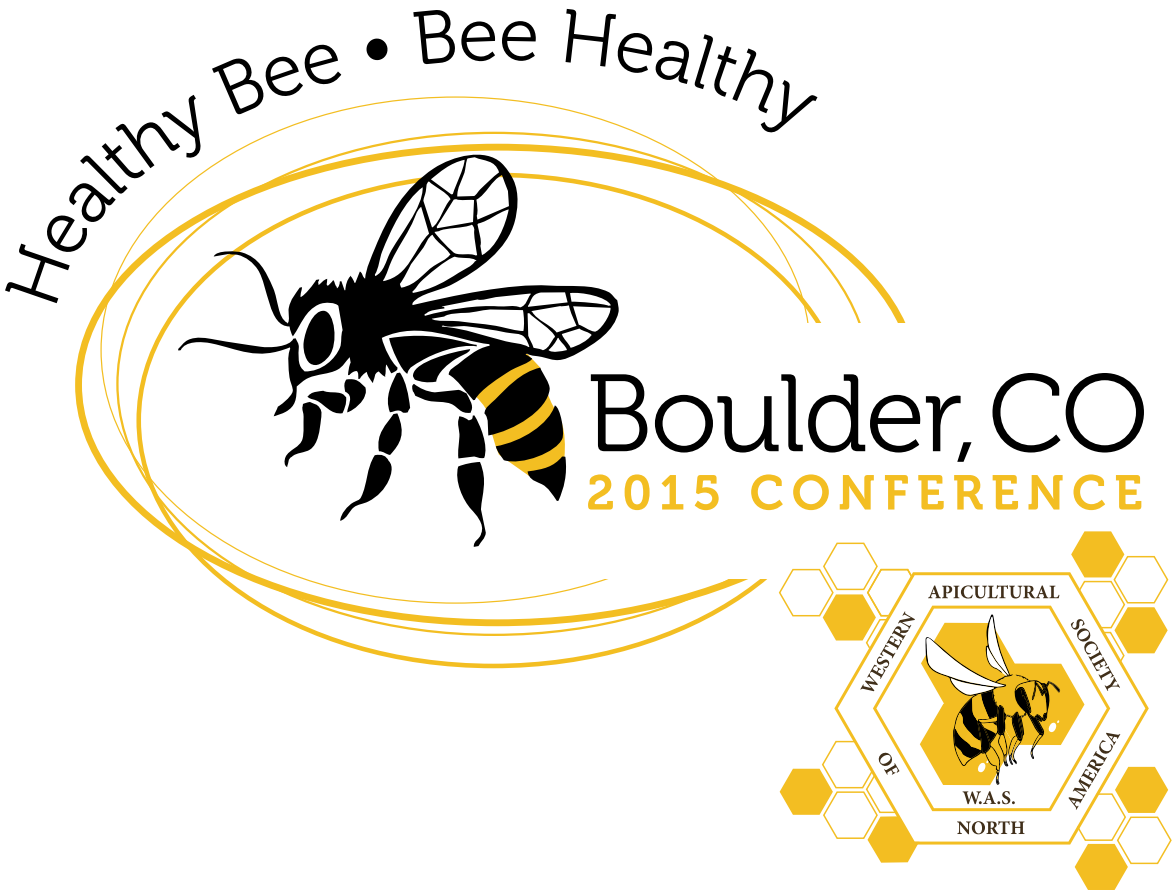
Entries must be received or post-marked by October 15, 2015. Due to difficulties and expense in shipping, International entries may be packaged in unbreakable containers (1 liter or 3 pounds US) which the Center will transfer into glass queenline bottles. Two beekeeper labels must be included for attaching.

For contest rules, visit: http://chbr.org/2015BlackJarHoneyContest/2015BlackJarRules.aspx

Grand Prize is $1500 U.S, blue ribbon, name added to trophy and Center website, and bragging rights for the whole world. We will also award $150 each to winners in ten categories - which will be determined based upon the qualities and quantity of entries received.

Due to the nature of tasting so many delicious flavors - it is necessary that numerous tastings be judged - with the winners moving on to 'regionals' 'semi-finals' etc. until we announce where and by whom the Best Tasting Honey in the World in 2015 was produced. Details of the Finals TBA.





WESTERN APICULTURAL SOCIETY - Colorado
October 1-3, 2015: Putting the B in Boulder

A save-the-date notice for the 2015 Bee Healthy, Healthy Bee conference, put on by the Colorado State Beekeeping Association on behalf of the Western Apicultural Society

https://www.powtoon.com/show/dfCzy9P2iI7/save-the-date-were-puttin-the-bee-in-boulder/#/

The Colorado State Beekeepers Association is pleased to host the Western Apicultural Society of North America 2015 annual conference. The conference will be held in Bee-utiful Boulder on **October 1-3, 2015** at the Millennium Hotel. Colorado is stunning in the fall. The elk are bugling in Rocky Mountain National Park, the aspens are turning, the days are warm and the nights are crisp.

The conference theme is "Putting the Bee in Boulder" and we are indeed! The first two days will be "Healthy Bee" and will focus on topics supporting bee health. The final day is "Bee Healthy" and is focused on bees and human health/ interaction and will be a community celebration featuring the ABF's "Kids and Bees" program as well as Matt Camper from CSU performing a "bee beard" (or two)!

The chosen weekend has also been declared Homecoming weekend by CU and we are absolutely delighted to have secured our lodging early on. The secured room rate is $159 per night. PLEASE NOTE THAT ROOM PRICING IS VALID UNTIL AUGUST 31, 2015! Use code WAS2015 to make the reservation.

We have a full schedule of top-notch speakers. We also have something for everyone! If you are a beginner, we have education opportunities for you! If you are an intermediate/advanced beekeeper, then we have education opportunities for you! We have speakers scheduled for both lunch and dinner, too. These events will be "first come-first serve" but we have allowed time for people to patronize nearby establishments if they "snooze and lose".

On Sunday, we will be offering some additional tour options for WAS members. From Banjo Billy's Bus Tours of Boulder to Rocky Mountain National Park from the Butterfly Pavilion and the Denver Botanic Gardens to the Celestial Seasonings tea tour, there will be an optional activity for everyone!

WAS Conference Schedule Highlights

Wednesday, September 30

The conference will begin on Wednesday afternoon with a Board of Directors meeting followed by the "Bee Buzz Social" featuring the "Bees Needs" citizen science program and the Museum of Natural History on CU campus will open their expansive bee collection (over 900 species!) for us to check out. Honey craft cocktails and hors d'oeuvres will be served.

Thursday, October 1

The conference goes into full swing with Elina Lastro Nino of UC-Davis kicking off a full day of interesting speakers! She will be joined by Jim Doan and Mark Winston as well as our partners at the Honey Bee Health Coalition and the Pollinator Stewardship Council. We will break into beginner and intermediate tracks for the balance of the afternoon.

Friday, October 2

Susan Kegley of the Pesticide Research Institute, Peter Loring Borst of Cornell University and Jonathan Lundgren of USDA set to entertain and educate us. We will again break into beginner and intermediate tracks for the afternoon. The Banquet and Award ceremony will be held at the hotel this evening and will present a terrific opportunity for you to hobnob with the speakers.

Saturday, October 3

On Saturday, the focus of our conference will change from "Healthy Bee" to "Bee Healthy" and a community-wide celebration will begin! The morning sessions will feature several mainstream physicians who are using honey for general human health as well as for wound care. Dr. Marla Spivak, MacArthur Fellow and head of the University of Minnesota Bee Lab, will join us for lunch. The afternoon is packed with activities for young and old. The ABF Kids and Bees program will be available for the youngsters. There are FIVE different tracks available for conference attendees in the afternoon ranging from Apitherapy to Book Signings, Gardening for Pollinators to a "Who's the Fairest of Them All" session featuring some of the country's finest bee breeders (including KB editor Melanie Kirby). Don't forget the Bee Beards!!!!!

Phew! Ready for a break—too bad! The Farm-to-Table dinner will be seating in the early evening and will feature renowned southwest gardener, Lauren Springer Ogden, as the keynote speaker. Come hungry!!! And let Boulder's finest farms tantalize your palate. (And if you are the winner of the Homecoming game tickets between the Oregon Ducks and the CU Buffaloes, we'll miss you!)

Sunday, October 4

There is a tremendous amount to do in the Boulder/Denver area and today is the day to take advantage of some of the unique opportunities available here. You can take a Banjo Billy Bus Tour of Boulder. Head to Celestial Seasonings for a FREE tour and, while you are there, pop next door and check out the Leanin' Tree Museum and Sculpture Garden of Western Art (also FREE!). Rocky Mountain National Park is celebrating its 100 year anniversary this year and I would not hesitate to head up to enjoy the spectacular scenery, the elk bugling and the aspens in their golden glory. Whatever your taste, there is plenty to see and do in the area.

The CSBA is pleased and honored to host the 2015 WAS conference. We hope you will join us! Come for the conference, stay for the experience.

To Register: http://www.westernapiculturalsociety.org/category/2015-conference-news/

Featured Speaker: Paul Hawken!

November 11-13, 2015 • Albuquerque, New Mexico

Plentiful, ample, bountiful, generous, fertile, rich, replete—these are words that describe both the attitude and the goals of the next wave of agrarians. A social movement is like an ocean wave. It arises at a certain period of time, gathers strength, grows and works toward a defined goal, becoming an effective agent of change for a while. Eventually, a new wave with fresh ideas and energy heads toward shore, building on the earlier wave's success. Today, the goal is to put the now large and diverse regenerative toolbox to work cultivating abundance for all.

In this conference, we will hear from ranchers, farmers, scientists, activists and others who are leading this next wave.

Visit http://www.quiviracoalition.org/

Beginners Introduction to Mead Making

EXPLORE THE RICH HISTORY OF THIS FASCINATING FERMENTED BEVERAGE FROM ITS ANCIENT ORIGINS TO ITS RECENT REBIRTH IN AMERICA. TASTE AND LEARN STYLES, INGREDIENT SELECTION, AND THE STEPS TO MAKING GOOD MEAD.

Friday & Saturday
November 13 - 14, 2015

Hosted by the Honey and Pollination Center at The Robert Mondavi Institute and the UC Davis Department of Viticulture and Enology

Register: **honey.ucdavis/edu/events**

UPCOMING EVENTS

September 2015

NC: Treatment Free Beekeeping workshop
September 11, 2015 1-4pm
Spring Creek Community Center
Info: www.BeeHealing.buzz

NC: Apitherapy Course
Profits go towards the Center for Honeybee Research.
September 12-13, 2015
Spring Creek Community Center
Info: www.BeeHealing.buzz

Georgia: Georgia Beekeepers Fall Meeting
September 18-19, 2015
Central Georgia Technical College
54 Hwy 22 West, Milledgeville, GA
Info: www.gabeekeeping.com
Jennifer Priddy will be representing Kelley Beekeeping. We will be taking orders for the show.

Alabama: Alabama Beekeepers Association 2015 Convention
September 25 & 26, 2015
Clanton Conference and Performing Arts Center
Exit 212 (@1.1 mile off I-65)
Info: www.alabamabeekeepers.com/documents/2015%20Convenioin%20nd%20Picnic,/Conv%20Main%20info%20page%202015.htm

NC: Our Planet in Balance: Bees, Fungi & Man - featuring Paul Stamets, Dr. Steve Sheppard, Dr. Jay Evans and Melanie Kirby
Saturday September 26, 2015 - 9am-5pm
Charles Beale Auditorium
Haywood Comm. College, Clyde, NC
Info: www.chbr.org

Missouri: Honey Festival - A Sweet Celebration of Nature with Ken Schramm, author of the Complete Meadmaker & Dr. Patrick McGovern of Penn Museum- the Indiana Jones of Ales, Wines and Extreme Beverages
September 26, 2015
Crestwood Barn, St. Louis, Missouri
Info: www.honeyfestivals.com

October 2015

Colorado: CSBA hosts the Western Apicultural Society of North America Annual Conference. Speakers from across the nation and tracks for all levels.
October 1-3, 2015
Millenium Hotel, Boulder, CO
Info: www.westernapiculturalsociety.org

Tennessee: 2015 Tennesee Beekeepers Association Conference featuring keynote Dr. Jennifer Berry
October 9-10, 2015
Hyder-Burks Agricultural Pavillion
Cookville, TN.
Info: www.tnbeekeepers.org
Kelley Beekeeping will be sending Jennifer Priddy to represent the show. We will be taking orders for the show.

Arkansas: 2015 Annual ABA Fall Meeting
October 9-10, 2015
Ozark Folk Center State Park
Mountain View, AR
Info: www.arbeekeepers.org

Ohio: The Four Pillars of Honeybee Management: Nutrition, Honey, Varroa, Winter featuring Randy Oliver, Dr. Jim Tew, Andy Card, John Miller. . .
October 24-25, 2015
Bee Culture Conference Center
A.I. Root Co. Campus, Medina, OH
Info: www.beeculture.com/events/the-four-pillars-of-honey-bee-management

Ohio State Beekeepers Association Fall Conference featuring Dr. Thomas Seeley, Kent Williams and Reed Johnson
October 31, 2015 - Plain City, Ohio
Info: www.ohiostatebeekeepers.org .
Kelley Beekeeping will be attending this event.

November 2015

California: 2015 CSBA Annual Convention
November 16 - 20, 2015
Hilton Sacramento Arden West
Sacramento, CA
Info: www.californiastatebeekeepers.com/events.html

Florida: Florida State Beekeepers Association Annual Fall Meeting featuring Jerry Hayes, Ross Conrad and more.
November 20-22, 2015
Omni Plantation Resort
Amelia Island, FL
Info: www.floridabeekeepers.org
Jennifer Priddy will be attending for Kelley Beekeeping.

We'd love to share news of your upcoming events. Please send the event name, date, website and/or contact information by the 10th of each month for inclusion in the following month's issue. Editor@KelleyBees.com